ORDER NO. 81071985C4

Service Manual

FM/AM Stereo Receiver

SA-424

[PA], [PE]

Areas

[PA] is available in far East PX.
[PE] is available in European Military.

Please use this manual together with the service manual for Model No. SA-424 [Silver Type: EX, EG, EH, XA, XL] Order No. SD81051901C8.

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)		Remarks
	SA-424 (Silver Type) (SD81051901C8) →	SA-424 (PA, PE)				
TRANSISTORS						
Q150, 151	2SC829–C	Deletion	Transistor, FM IF Amplifer	0		
Q152	2SC1815–Y	Deletion	Transistor, Switching	0		
DIODES						
D150, 151	**MA162A**	Deletion	Diode, Switching	0		
D921 ~ 923	LN413YP	LN213RP	Light Emitting Diode, Red	3		
D924, 925	LN413YP	LN313GP	Light Emitting Diode, Green	2		
COIL						
L101	SLMIC61–P	Deletion	Coil	1		
CERAMIC FILTERS						
CF104	SVFE107MM–B	Deletion	Ceramic Filter, FM10.68MHz, Blue	0		
CF105	SVFE107MZ2–B	Deletion	Ceramic Filter, FM10.675MHz, Blue	0		
VARIABLE RESISTOR						
VR303	**EVTS3MA00B55**	Deletion	Separation Adjustment, 500kΩ (B)	0		
SWTICH						
S15	SSH539	SSH437	Switch, Subsonic, FM Muting and Auto Scan	1		
RESISTORS						
R105	**ERO25CKF1002**	ERO25CKF2702	Metal Film, 27kΩ, 1/4W, ± 1%	1		
R150	RRD18XK102	Deletion	Chip, 1kΩ, 1/8W, ±10%	0		
R151	RRD18XK392	Deletion	Chip, 3.9kΩ, 1/8W, ±10%	0		
R152	RRD18XK102	Deletion	Chip, 1kΩ, 1/8W, ±10%	0		
R153	RRD18XK681	Deletion	Chip, 680Ω, 1/8W, ±10%	0		

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

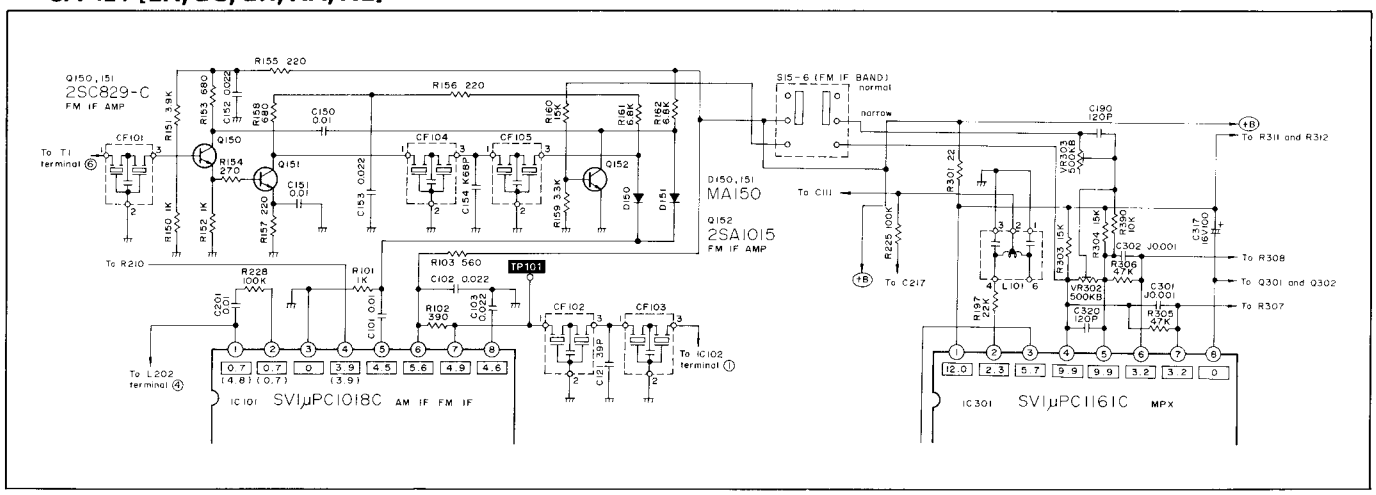
Ref. No.	Change of Part No. SA-424 (Silver Type) (SD81051901C8)	→ SA-424 (PA, PE)	Part Name & Description	Per Set (Pcs.)		Remarks
R154	RRD18XK271	Deletion	Chip, 270Ω, 1/8W, ±10%	0		
R155, 156	RRD18XK221	Deletion	Chip, 220Ω, 1/8W, ±10%	0		
R157	RRD18XK221	Deletion	Chip, 220Ω, 1/8W, ±10%	0		
R158	RRD18XK681	Deletion	Chip, 680Ω, 1/8W, ±10%	0		
R159	RRD18XK332	Deletion	Chip, 3.3kΩ, 1/8W, ±10%	0		
R160	RRD18XK153	Deletion	Chip, 15kΩ, 1/8W, ±10%	0		
R161, 162	RRD18XK682	Deletion	Chip, 6.8kΩ, 1/8W, ±10%	0		
R197	**ERO25CKF1502**	Deletion	Metal Film, 15kΩ, 1/4W, ± 5%	0		
R390	RRD18XK103	Deletion	Chip, 10kΩ, 1/8W, ±10%	1		
CAPACITORS						
C50, 51	ECKDHS101MB [XL] only	Deletion	Ceramic, 100pF, 400VAC, ±20%	0		
C52	ECKDHS102MD [XL] only	Deletion	Ceramic, 0.001μF, 400VAC, ±20%	0		
C53	**ECEA50Z1** [XL] only	Deletion	Electrolytic, 1μF, 50V	0		
C121	Addition	ECUX1H390KC	Chip, 39pF, 50V, ±10%	1		
C129	Addition	ECCD1H470K	Ceramic, 47pF, 50V, ±10%	1		
C150	ECKD1H103ZF	Deletion	Ceramic, 0.01μF, 50V $^{+80}_{-20}$%	0		
C151	ECUX1H103ZF	Deletion	Chip, 0.01μF, 50V, $^{+80}_{-20}$%	0		
C152, 153	ECKD1H223ZF	Deletion	Ceramic, 0.022μF, 50V, $^{+80}_{-20}$%	0		
C154	ECUX1H390KC	Deletion	Chip, 39pF, 50V, ±10%	0		
C190	ECCD1H121K	Deletion	Ceramic, 120pF, 50V, ±10%	0		
C191	**ECEA50Z3R3**	Deletion	Electrolytic, 3.3μF, 50V	0		
C250	ECKDHS102MD [XL] only	Deletion	Ceramic, 0.001μF, 400VAC, ±20%	0		
C301, 302	ECQM1H102JZ	ECQM1H122JZ	Polyester, 0.0012μF, 50V, ± 5%	2		
C305, 306	ECQM1H472KZ	ECQM1H682JZ	Polyester, 0.0068μF, 50V, ± 5%	2		
C320	ECCD1H121K	ECCD1H680K	Ceramic, 68pF, 50V, ±10%	1		
CABINET and CHASSIS PARTS						
2	SBC321–7	SBC321–6	Button, Power and Input Selector	4		
4	SGWA424E	SGWA424M	Front Panel, Ass'y	1		
4-3	SBC329–2	SBC329	Button, AM/FM Selector	1		
4-4	SBC327–1	SBC327	Button, Tuning	2		
4-5	SBC325–1	SBC325	Button, Preset	1		
16	SGP2510–1F [EX] SGP2510–1D [EG, EH] SGP2510–2B [XA] SGP2510–3B [XL]	SGP2510–2B	Rear Panel	1		
17	SHR127 SHR131 [XL] only	SHR127	Bushing, AC Cord	1		
18	**SJA88** SJA111 [XA] only **QFC1207MA** [XL] only	**RJA52Z**	AC Cord	1		RD
25	SJF8029N SJF8029–2N [XL] only SJF8029–6N [EG] only	SJF8029N	Terminal Board, Input	1		
28	SJSA66–2 [XA] only	SJSA66–2	Socket, AC Outlet	2		
SCREWS, WASHERS and NUT						
N20	XTBS3+8BFZ1 XSTS3+8Z [XL] only	XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8	1		
ACCESSORIES						
A2	SJP5213–1 [XA] only	RJP120ZBS	Plug Adaptor, AC Power	1		
A3	SQF10803 [EG] only SQF10805 [XA] only SQF10885	SQF10807	Instructions Book, Printed Matter	1		

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)		Remarks
	SA-424 (Silver Type) (SD81051901C8)	SA-424 (PA, PE)				
PACKING PARTS						
P2	SPS3015-2 SPS3015– 1 [XL] only	SPS3015–2	Pad, Left Side	1		
P3	SPS3017 SPS3017– 1 [XL] only	SPS3017	Pad, Right Side	1		
P4	SPG3107 SPG3109	SPG3107	Carton Box	1		

■ CHANGE OF SCHEMATIC DIAGRAM

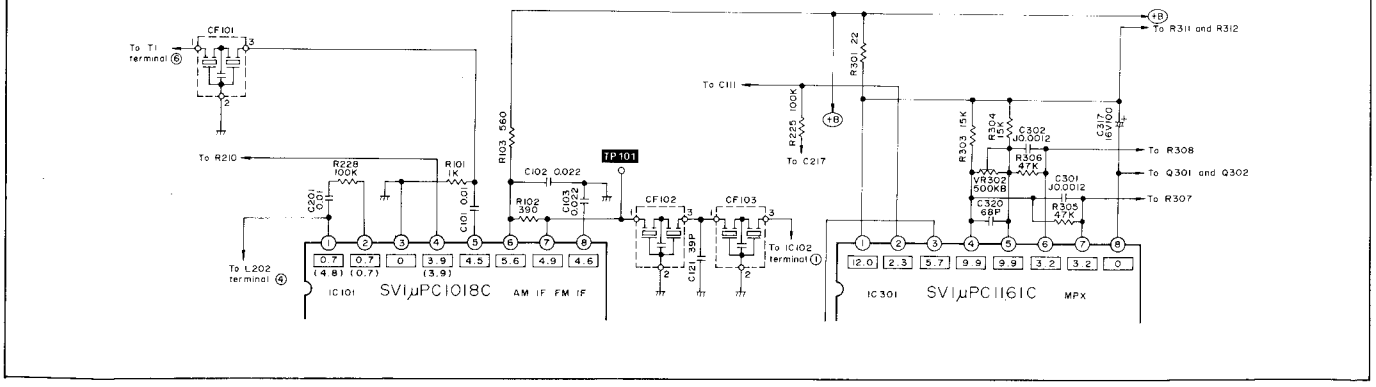
- **Tuner circuit**

SA-424 [EX, EG, EH, XA, XL]



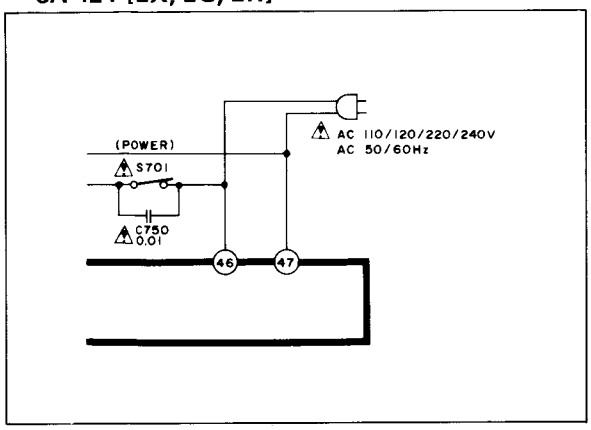
CHANGE

SA-424 [PA, PE]



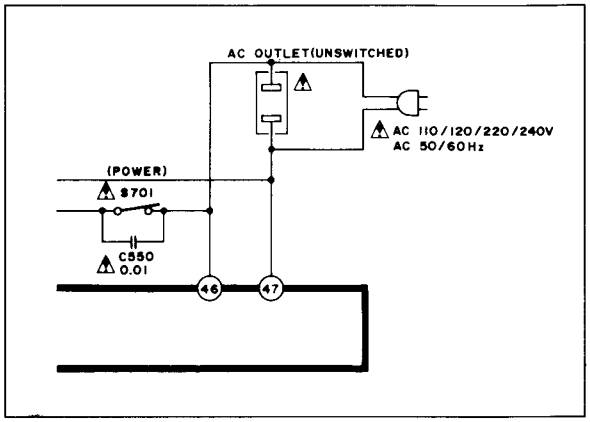
- **Power circuit**

SA-424 [EX, EG, EH]



CHANGE

SA-424 [PA, PE]



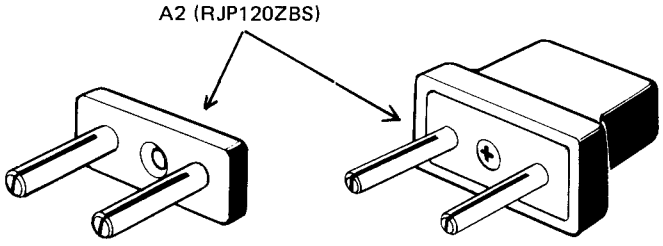
■ REPLACEMENT PARTS LIST ..... Cabinet, Chassis and Packing Parts

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be use for safety.

Ref. No.		Part No.	Part Name & Description
SCREWS, WASHERS and NUT			
N1		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8
N2		**XTB3+10B**	Screw, Tapping ⊕ 3 x 10
N3		**XSN3+6S**	Screw, ⊕ 3 x 6
N4		**XWA3B**	Washer, Spring ø3
N5		SNE4021	Nut
N6		XTBS3+8BFZ1	Screw, Tapping with Detent + 3 x 8
N7		**XWG3**	Washer, Plain ø3
N8		**XTN3+10B**	Screw, Tapping ⊕ 3 x 10
N9		**XTB4+8BFN**	Screw, Tapping ⊕ 4 x 8
N10		**XTB3+8BFN**	Screw, Tapping ⊕ 3 x 8
N12		**XWG4FZ**	Washer, Plain ø4
N13		**XWA4BFZ**	Washer, Spring ø4
N14		**XSN4+10BVS**	Screw, ⊕ 4 x 10
N15		**XTB3+16B**	Screw, Tapping ⊕ 3 x 16
N16		**XWA3BFZ**	Washer, Spring ø3
N17		**XSN3+6BVS**	Screw, ⊕ 3 x 6
N18		**XTB3+10BFZ**	Screw, Tapping ⊕ 3 x 10
N19		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8
N20		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8
N21		**XWA26BFZ**	Washer, Spring ø2.6
N22		**XSN26+5BV**	Screw, ⊕2.6 x 5
N23		**XWG3**	Washer, Plain ø3
N24		**XTN3+12BFZ**	Screw, Tapping ⊕ 3 x 12
ACCESSORIES			
A1		SSA267	Cord, FM Indoor Antenna
A2		RJP120ZBS	Plug Adaptor, AC Power
A3		SQF10807	Instructions Book, Printed Matter
PACKING PARTS			
P1		SPP689	Polyethylen Bag
P2		SPS3015–2	Pad, Left Side
P3		SPS3017	Pad, Right Side
P4		SPG3107	Carton Box

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1		SGX6967	Ornament, Left Side
2		SBC321–6	Button, Power and Input Selector
3		SUS163	Spring, Button
4		SGWA424M	Front Panel Ass'y
4–1		SGU195	Transparent Cover
4–2		SGX6971–1	Ornament Plate
4–3		SBC329	Button, AM FM Selector
4–4		SBC327	Button, Tuning
4–5		SBC325	Button, Preset
4–6		SDU57	Guide, LED
4–7		SUW1735–1	Bracket, PCB
5		SBN973	Knob, Tone and Balance Control
6		SBN971	Knob, Volume Control
7		SGX6969	Ornament, Right Side
8		SDU51	Plate, Ornament
9		SDU53–1	Tinted Plate
10		SHR9539	Holder, LED (Quart Lock)
11		SHR9537	Holder, LED (Signal)
12		SBC323–1	Button, Push Switch
13		SJJ61	Jack, Headphones
14		SMP301–1	Cover, Lamp
15		SKCA424E	Cabinet Cover
16		SGP2510–2B	Rear Panel
17		SHR127	Bushing, AC Cord
18	⚠	**RJA52Z**	AC Cord
19		SJF4813–1	Terminal Board, Speaker
20		SJB3005–1	Battery Case
21		SJC7	Battery Terminal
22		SJC9	Battery Terminal
23		SHR5025	Cover, Allocation Switch
24		RJT202B	Terminal
25		SJF8029N	Terminal Board, Input
26		SYU269E	Bottom Cover
27		SUV453	Cover, Voltage Adjuster Switch
28	⚠	SJSA66–2	Socket, AC Outlet

- **Accessory**



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ORDER NO. SD81051901C8

Service Manual

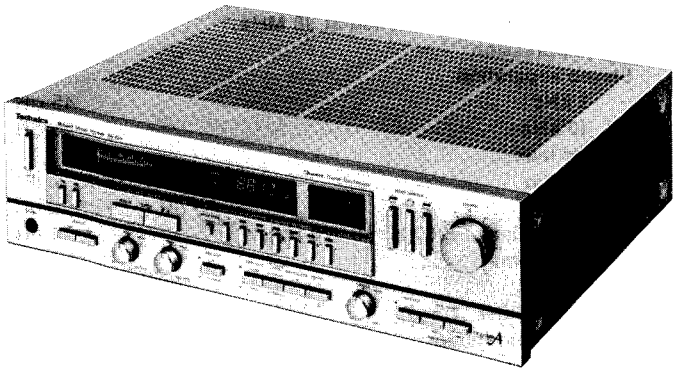
FM/AM Stereo Receiver

SA-424

[EX], [EG], [EH],
[XA], [XL]

SA-424(K)

[EG], [EH]



*** The cabinet and front panel are available in black color and silver types.**
*** The black type model is provided with (K) in the Service Manual.**

Areas

* [EX] is available in Switzerland and Scandinavia.
* [EG] is available in F.R. Germany.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

■ CONTENTS

	Page
SPECIFICATIONS (English)	1, 2
TECHNISCHE DATEN (Deutsch)	2, 3
CARACTERISTIQUES (Français)	3, 4
LOCATION OF CONTROLS	5
DISASSEMBLY INSTRUCTIONS	5 ~ 8
MEASUREMENTS AND ADJUSTMENTS (English)	8 ~ 10
MESSUNGEN UND JUSTIERUNGEN (Deutsch)	10 ~ 12
MESURAGES ET RÉGLAGES (Français)	13 ~ 15
ADJUSTMENT POINTS	15, 16
BLOCK DIAGRAM	17, 18
LOCATION OF PRINTED CIRCUIT BOARDS	19
REPLACEMENT PARTS LIST	
Electrical Parts	19, 20, 32, 33
Cabinet and Chassis Parts	34
CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM	21 ~ 26
SCHEMATIC DIAGRAM	27 ~ 31
EXPLODED VIEW	35, 36

English

Specifications

(Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ AMPLIFIER SECTION

20 Hz~20 kHz continuous power output	
both channels driven	2 × 50W (4Ω)
	2 × 45W (8Ω)
40 Hz~16 kHz continuous power output	
both channels driven	2 × 50W (4Ω)
	2 × 45W (8Ω)
1 kHz continuous power output	
both channels driven	2 × 55W (4Ω)
	2 × 48W (8Ω)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.015% (4Ω)
	0.007% (8Ω)
rated power at 40 Hz~16 kHz	0.015% (4Ω)
	0.007% (8Ω)
rated power at 1 kHz	0.007% (4Ω)
	0.001% (8Ω)
half power at 20 Hz~20 kHz	0.007% (8Ω)
half power at 1 kHz	0.001% (8Ω)
−26 dB power at 1 kHz	0.07% (4Ω)
50 mW power at 1 kHz	0.12% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz=4:1, 4Ω	0.015%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.01%
Power bandwidth	
both channels driven, −3 dB	
	5 Hz~40 kHz (T.H.D. 0.04%, 4Ω)
	5 Hz~40 kHz (T.H.D. 0.02%, 8Ω)
Damping factor	20 (4Ω), 40 (8Ω)
Input sensitivity and impedance	
PHONO	2.5 mV/47kΩ
AUX	150 mV/22kΩ
TAPE 2	150 mV/22kΩ
TAPE 1 REC/PLAY	180 mV/25kΩ
PHONO maximum input voltage (1 kHz, RMS)	150 mV

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SA-424

S/N	
rated power (4Ω)	
PHONO	74 dB (IHF, A: 82 dB)
AUX, TAPE	88 dB (IHF, A: 98 dB)
−26 dB power (4Ω)	
PHONO	63 dB
AUX, TAPE	65 dB
50 mW power (4Ω)	
PHONO	60 dB
AUX, TAPE	60 dB
Frequency response	
PHONO	RIAA standard curve ±0.5 dB (30 Hz~15 kHz)
AUX, TAPE	5 Hz~80 kHz (−3 dB) ±0.2 dB (20 Hz~20 kHz)
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Subsonic filter	30 Hz, −6 dB/oct.
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Output voltage and impedance	
TAPE, 1, 2 REC OUT	150 mV
TAPE 1 REC/PLAY	30 mV/82kΩ
Channel balance, AUX 250 Hz~6,300 Hz	±1 dB
Channel separation, AUX 1 kHz	55 dB
Headphones output level and impedance	450 mV/330Ω
Load impedance	
MAIN or REMOTE	4Ω~16Ω
MAIN and REMOTE	8Ω~16Ω

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz (0.05 MHz-step) 87.9~107.9 MHz (0.2 MHz-step)
Sensitivity	
S/N 30 dB	1.9 μV (300Ω), 1.3 μV (75Ω)
S/N 26 dB	1.7 μV (300Ω), 1.2 μV (75Ω)
S/N 20 dB	1.5 μV (300Ω), 0.9 μV (75Ω)
IHF usable sensitivity	1.9 μV (IHF '58)
IHF 46 dB stereo quieting sensitivity	22 μV/75Ω
Total harmonic distortion	
MONO	0.15%
STEREO	0.2%
S/N	
MONO	65 dB (75 dB, IHF)
STEREO	60 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +1 dB~ −2 dB
Alternate channel selectivity	
wide	±400 kHz 75 dB
narrow	±300 kHz 75 dB
Capture ratio	1.2 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	75 dB
Spurious response rejection at 98 MHz	82 dB
AM suppression	55 dB
Stereo separation	
1 kHz	45 dB
10 kHz	35 dB
Carrier leak	
19 kHz	−30 dB (−38 dB, IHF)
38 kHz	−50 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.5 dB
Limiting point	1.2 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	300Ω (balanced) 75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	522~1611 kHz (9 kHz-step) 530~1620 kHz (10 kHz-step)
Sensitivity (S/N 20 dB)	30 μV, 300 μV/m
Selectivity	55 dB
Image rejection at 1,000 kHz	50 dB
IF rejection at 1,000 kHz	40 dB

■ GENERAL

Power consumption	420W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 120 × 350 mm (16-15/16" × 4-23/32" × 13-25/32")
Weight	7.7 kg (17.0 lb.)

Note:
Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

Deutsch

TECHNISCHE DATEN (Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz	
beide Kanäle ausgesteuert	2 × 50W (4 Ω) 2 × 45W (8 Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz	
beide Kanäle ausgesteuert	2 × 50W (4 Ω) 2 × 45W (8 Ω)
Dauerton-Ausgangsleistung bei 1 kHz	
beide Kanäle ausgesteuert	2 × 55W (4 Ω) 2 × 48W (8 Ω)
Gesamtklirrfaktor	
Nennleistung bei 20 Hz ~ 20 kHz	0,015% (4 Ω) 0,007% (8 Ω)
Nennleistung bei 40 Hz ~ 16 kHz	0,015% (4 Ω) 0,007% (8 Ω)
Nennleistung bei 1 kHz	0,007% (4 Ω) 0,001% (8 Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz	0,007% (8 Ω)
halbe Nennleistung bei 1 kHz	0,001% (8 Ω)
−26 dB Leistung bei 1 kHz	0,07% (4 Ω)
50 mW Leistung bei 1 kHz	0,12% (4 Ω)
Intermodulationsfaktor	
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω	0,015%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,01%
Leistungsbandbreite	
beide Kanäle ausgesteuert bei −3 dB	5 Hz ~ 40 kHz (T.H.D. 0,04%, 4 Ω) 5 Hz ~ 40 kHz (T.H.D. 0,02%, 8 Ω)
Dämpfungsfaktor	20 (4 Ω), 40 (8 Ω)
Eingangsempfindlichkeit und -impedanz	
Phono	2,5 mV/47 kΩ
Aux	150 mV/22 kΩ
Tape 2	150 mV/22 kΩ
Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)	180 mV/25 kΩ
Maximale TA-Eingangsspannung (1 kHz, eff.)	150 mV

Geräuschabstand
- **Nennleistung (4 Ω)**
  - **Phono** 74 dB (nach IHF, A: 82 dB)
  - **Aux, Tape** 88 dB (nach IHF, A: 98 dB)
- **−26 dB Leistung (4 Ω)**
  - **Phono** 63 dB
  - **Aux, Tape** 65 dB
- **50 mW Leistung (4 Ω)**
  - **Phono** 60 dB
  - **Aux, Tape** 60 dB

Frequenzgang
- **Phono** RIAA-Standardkurve ±0,5 dB (30 Hz ~ 15 kHz)
- **Aux, Tape** 5 Hz ~ 80 kHz(−3 dB) ±0,2 dB (20 Hz ~ 20 kHz)

Klangregler
- **Baßregler (BASS)** 50 Hz, +10 dB ~ −10 dB
- **Höhenregler (TREBLE)** 20 kHz, +10 dB ~ −10 dB

Tiefenfilter 30 Hz, −6 dB/Okt.

Gehörrichtige Lautstärkekorrektur (Loudness)
- **(bei −30 dB Ausgangsleistung)** 50 Hz, +9 dB

Ausgangsspannung und -impedanz
- **Tape 1/2 Aufnahme (TAPE 1, 2 REC OUT)** 150 mV
- **Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)** 30 mV/82 kΩ

Kanalabweichung (Aux, 250 Hz ~ 6300 Hz) ±1 dB

Übersprechdämpfung (Aux, 1 kHz) 55 dB

Kopfhörerpegel und -impedanz 450 mV/330 Ω

Lautsprecherimpedanz
- **MAIN oder REMOTE** 4 Ω ~ 16 Ω
- **MAIN und REMOTE** 8 Ω ~ 16 Ω

■ UKW-TUNERTEIL

Wellenbereich 87,50 ~ 108,00 MHz (0,05-MHz-Schritte) 87,9 ~ 107,9 MHz (0,2-MHz-Schritte)

Eingangsempfindlichkeit
- **S/R 30 dB** 1,3 μV (75 Ω) (Nur für Deutschland bestimmt)
- **S/R 26 dB** 1,2 μV (75 Ω) (Nur für Deutschland bestimmt)
- **S/R 20 dB** 0,9 μV (75 Ω) (Nur für Deutschland bestimmt)
- **S/R 30 dB** 1,9 μV (300 Ω), 1,3 μV (75 Ω) (Für andere Länder)
- **S/R 26 dB** 1,7 μV (300 Ω), 1,2 μV (75 Ω) (Für andere Länder)
- **S/R 20 dB** 1,5 μV (300 Ω), 0,9 μV (75 Ω) (Für andere Länder)

Nutzempfindlichkeit nach IHF 1,9 μV (nach IHF '58)

Stereoumschaltschwelle bei 46 dB nach IHF 22 μV/75 Ω

Gesamtklirrfaktor
- **Mono** 0,15%
- **Stereo** 0,2%

Geräuschabstand
- **Mono** 65 dB (75 dB nach IHF)
- **Stereo** 60 dB (70 dB nach IHF)

Frequenzgang 20 Hz ~ 15 kHz (+1 dB ~ −2 dB)

Trennschärfe bei Störsender
- **breit** ±400 kHz 75 dB
- **schmal** ±300 kHz 75 dB

Einfangverhältnis 1,2 dB

Spiegelfrequenz-Dämpfung bei 98 MHz 55 dB

ZF-Dämpfung bei 98 MHz 75 dB

Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz 82 dB

AM-Unterdrückung 55 dB

Übersprechdämpfung
- **1 kHz** 45 dB
- **10 kHz** 35 dB

Trägerrest
- **19 kHz** −30 dB (−38 dB nach IHF)
- **38 kHz** −50 dB (−50 dB nach IHF)

Kanalabweichung (250 Hz ~ 6300 Hz) ±1,5 dB

Begrenzereinsatz 1,2 μV

Bandbreite
- **ZF-Verstärker** 180 kHz
- **UKW-Demodulator** 1000 kHz

Antennenanschluß
75 Ω (unsymmetrisch) (Nur für Deutschland bestimmt)
300 Ω (symmetrisch) (Für andere Länder)
75 Ω (unsymmetrisch) Für andere Länder)

■ AM-TUNERTEIL

Wellenbereiche 522 ~ 1611 kHz (9-kHz-Schritte) 530 ~ 1620 kHz (10-kHz-Schritte)

Eingangsempfindlichkeit (S/R 20 dB) 30 μV, 300 μV/m

Trennschärfe 55 dB

Spiegelfrequenz-Dämpfung bei 1000 kHz 50 dB

ZF-Dämpfung bei 1000 kHz 40 dB

■ ALLGEMEINE DATEN

Leistungsaufnahme 420 W

Netzspannung
Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V

Abmessungen (B×H×T) 430 × 120 × 350 mm

Gewicht 7,7 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

Français

CARACTERISTIQUES (Sujet à changement sans préaris.)

(DIN 45 500)

■ SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz~20 kHz, les deux canaux en circuit 2 × 50W (4Ω) 2 × 45W (8Ω)

Puissance de sortie continue de 40 Hz~16 kHz, les deux canaux en circuit 2 × 50W (4Ω) 2 × 45W (8Ω)

Puissance de sortie continue à 1 kHz les deux canaux en circuit 2 × 55W (4Ω) 2 × 48W (8Ω)

Distorsion harmonique totale
- **à puissance nominale (20 Hz~20 kHz)** 0,015% (4Ω) 0,007% (8Ω)
- **à puissance nominale (40 Hz~16 kHz)** 0,015% (4Ω) 0,007% (8Ω)
- **à puissance nominale (1 kHz)** 0,007% (4Ω) 0,001% (8Ω)
- **à demi-puissance (20 Hz~20 kHz)** 0,007% (8Ω)
- **à demi-puissance (1 kHz)** 0,001% (8Ω)
- **puissance de −26 dB à 1 kHz** 0,07% (4Ω)
- **puissance de 50 mW à 1 kHz** 0,12% (4Ω)

Distorsion d'intermodulation
- **à puissance nominale à 250 Hz: 8 kHz=4:1, 4Ω** 0,015%
- **à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω** 0,01%

SA-424

Réponse de fréquences
les deux canaux en circuit, −3 dB
5 Hz~40 kHz (T.H.D. 0,04%, 4Ω)
5 Hz~40 kHz (T.H.D. 0,02%, 8Ω)
Coefficient d'amortissement 20 (4Ω), 40 (8Ω)
Sensibilité et impédance d'entrée
PHONO 2,5 mV/47kΩ
AUX (AUX) 150 mV/22kΩ
BANDE 2 (TAPE 2) 150 mV/22kΩ
BANDE 1, ENREGISTREMENT/LECTURE (TAPE 1 REC/PLAY) 180 mV/25kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS) 150 mV
Signal/Bruit
à puissance nominale (4Ω)
PHONO 74 dB (IHF, A: 82 dB)
AUX, BANDE (AUX, TAPE) 88 dB (IHF, A: 98 dB)
puissance de −26 dB (4Ω)
PHONO 63 dB
AUX, BANDE (AUX, TAPE) 65 dB
puissance de 50 mW (4Ω)
PHONO 60 dB
AUX, BANDE (AUX, TAPE) 60 dB
Réponse de fréquence
PHONO Courbe nominale RIAA ±0,5 dB (30 Hz~15 kHz)
AUX, BANDE (AUX, TAPE) 5 Hz~80 kHz (−3 dB) ±0,2 dB (20 Hz~20 kHz)
Réglage de la tonalité
BASSES (BASS) 50 Hz, +10 dB~ −10 dB
AIGUS (TREBLE) 20 kHz, +10 dB~ −10 dB
Filtre subsonique 30 Hz, −6 dB/oct.
Compensateur physiologique (volume à −30 dB) 50 Hz, +9 dB
Tension de sortie et impédance
SORTIE ENREGISTREMENT/BANDE 1, 2 (TAPE 1, 2 REC OUT) 150 mV
ENREGISTREMENT/LECTURE BANDE 1 (TAPE 1 REC/PLAY) 30 mV/82kΩ
Equilibrage des canaux, AUX 250 Hz~6 300 Hz ±1 dB
Séparation des canaux, AUX 1 kHz 55 dB
Niveau de sortie des casques et impédance 450 mV/330Ω
Impédance de charge
PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE) 4Ω~16Ω
PRINCIPALE et AUXILIAIRE (MAIN and REMOTE) 8Ω~16Ω

■ SECTION SYNTONISATEUR FM

Gamme de fréquence
87,50~108,00 MHz (0,05 MHz par palier)
87,9~107,9 MHz (0,2 MHz par palier)
Sensibilité
S/B 30 dB 1,9 μV (300Ω), 1,3 μV (75Ω)
S/B 26 dB 1,7 μV (300Ω), 1,2 μV (75Ω)
S/B 20 dB 1,5 μV (300Ω), 0,9 μV (75Ω)
Sensibilité utilisable IHF 1,9 μV (IHF '58)
Sensibilité stéréo au seuil de 46 dB, IHF 22 μV/75Ω
Distorsion harmonique totale
MONO 0,15%
STEREO 0,2%
Signal/Bruit
MONO 65 dB (75 dB, IHF)
STEREO 60 dB (70 dB, IHF)
Réponse de fréquence 20 Hz~15 kHz, +1 dB~ −2 dB
Sélectivité alternée par canal
Large ±400 kHz 75 dB
Etroite ±300 kHz 75 dB
Taux de capture 1,2 dB
Rejection d'image à 98 MHz 55 dB
Rejection FI à 98 MHz 75 dB
Rejection de réponse parasite à 98 MHz 82 dB
Suppression AM 55 dB
Séparation stéréophonique
1 kHz 45 dB
10 kHz 35 dB
Fuite de porteuse
19 kHz −30 dB (−38 dB, IHF)
38 kHz −50 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz~6,300 Hz) ±1,5 dB
Point de limite 1,2 μV
Largeur de bande
Amplificateur FI 180 kHz
Démodulateur FM 1000 kHz
Bornes d'antenne 300Ω (symétrique) 75Ω (asymétrique)

■ SECTION SYNTONISATEUR AM

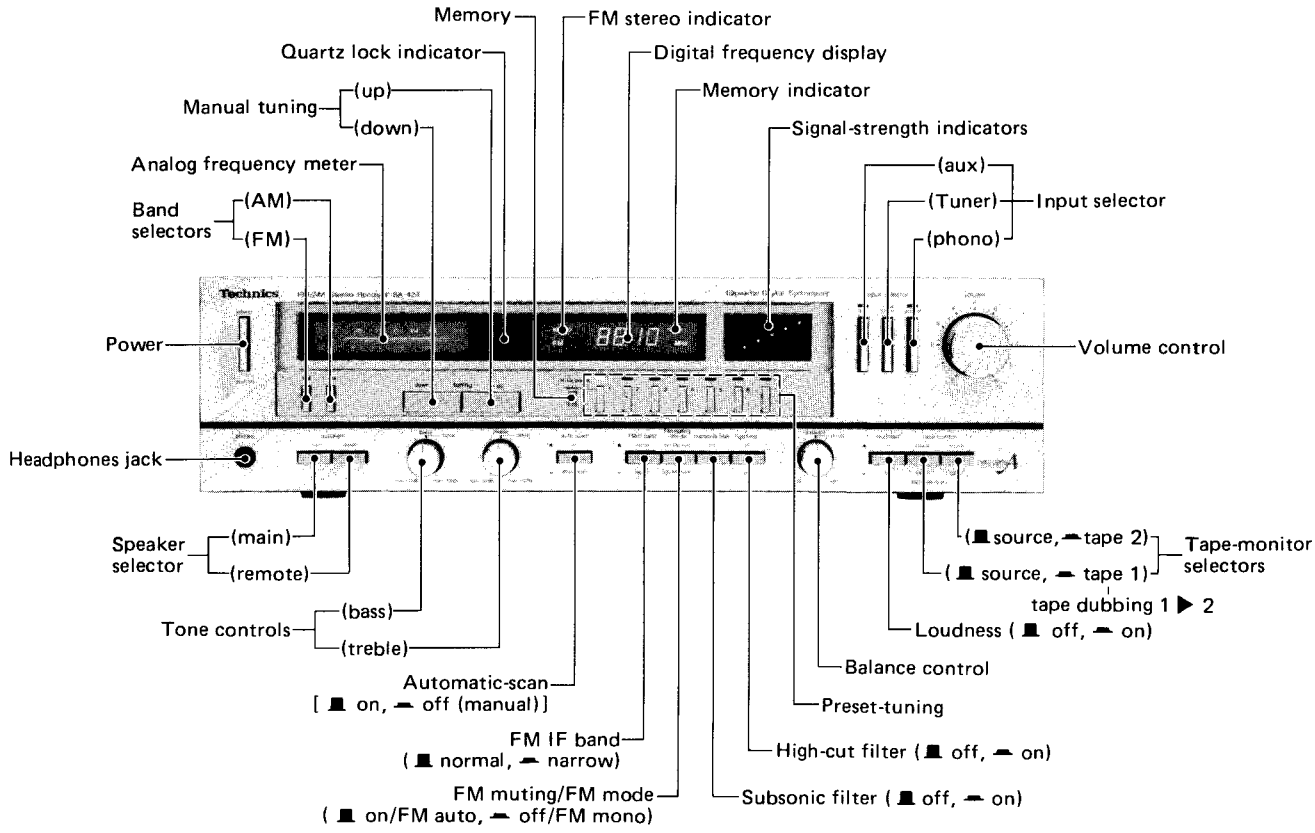
Gamme de fréquence 522~1611 kHz (9 kHz par palier) 530~1620 kHz (10 kHz par palier)
Sensibilité (S/B 20 dB) 30 μV, 300 μV/m
Sélectivité 55 dB
Réjection d'image à 1,000 kHz 50 dB
Réjection FI à 1,000 kHz 40 dB

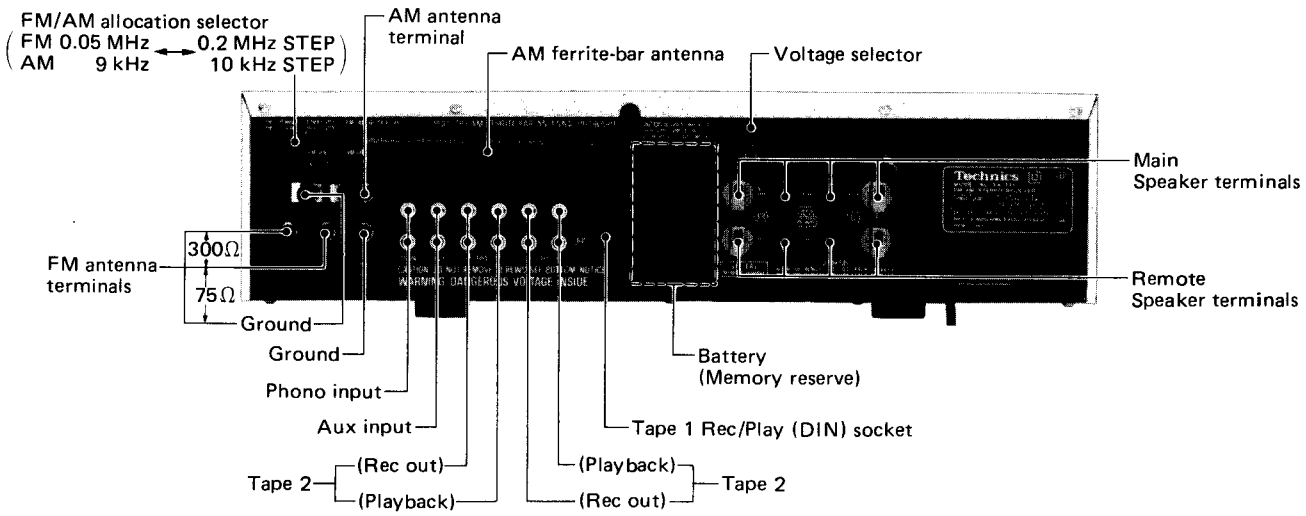
■ DIVERS

Consommation 420W
Alimentation CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr) 430 × 120 × 350 mm
Poids 7,7 kg

Remarque:
On mesure la distorsion harmonique totale au moyen d'un analyseur de spectre digital (Système H.P. 3045).

■ LOCATION OF CONTROLS





- **FM Antenna**

  Note that the FM antenna terminals used on products for F.R. Germany [EG] are the 75Ω Type only.

■ DISASSEMBLY INSTRUCTIONS

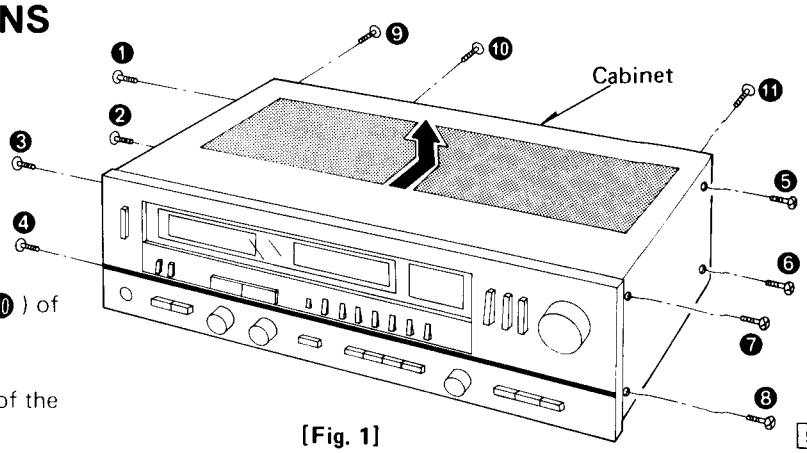
• How to remove the cabinet

1. Remove the 8 setscrews (Fig. 1 : ❶~❽) on the side and 3 setscrews (Fig. 1 : ❾ ~ ⓫) on the back of the cabinet.
2. Remove the cabinet.

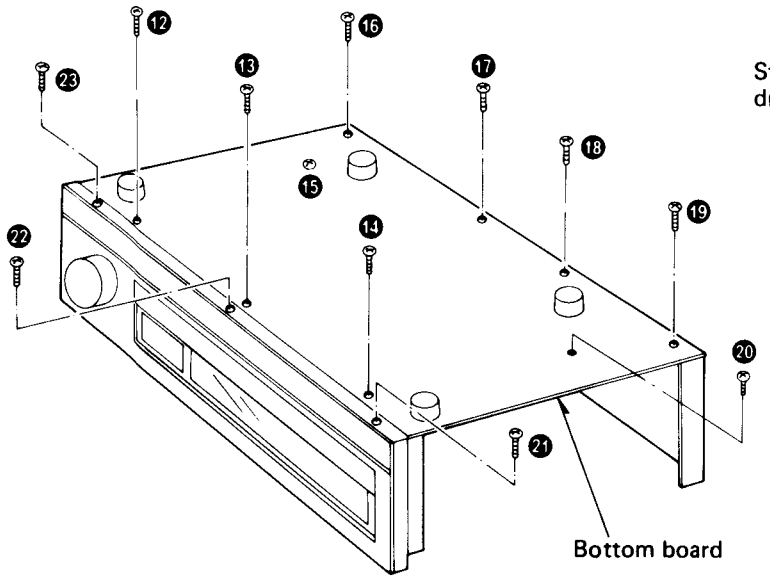
• How to remove the bottom board

1. Remove the 8 setscrews (Fig. 2 : ⓬ ~ ⓮ , ⓰ ~ ⓴) of the bottom board.
2. Remove the bottom board.

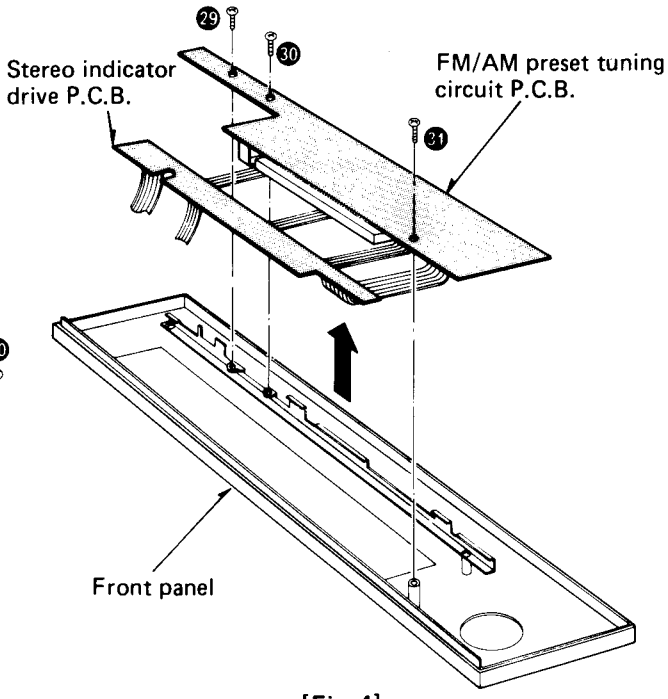
   Note: Don't remove the 1 setscrew (Fig. 2 : ⓯) of the bottom board.



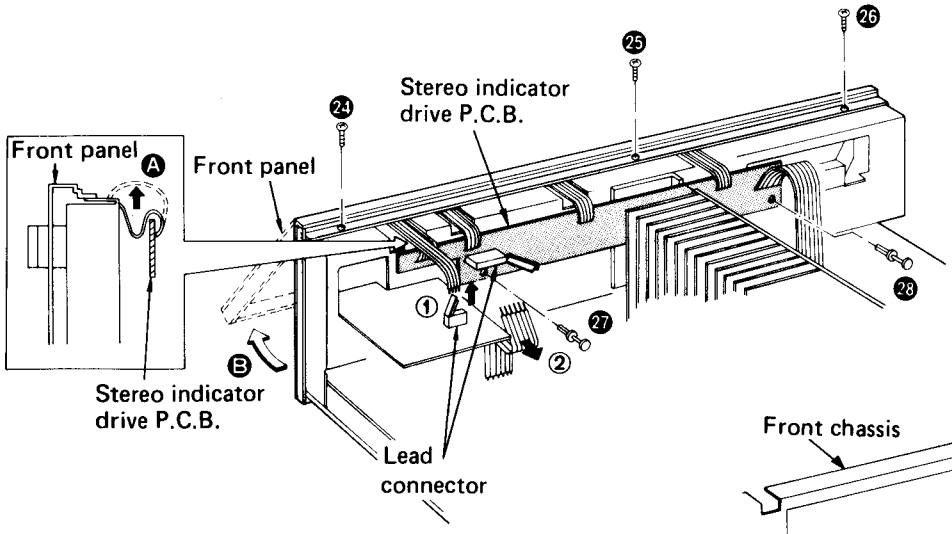
[Fig. 1]



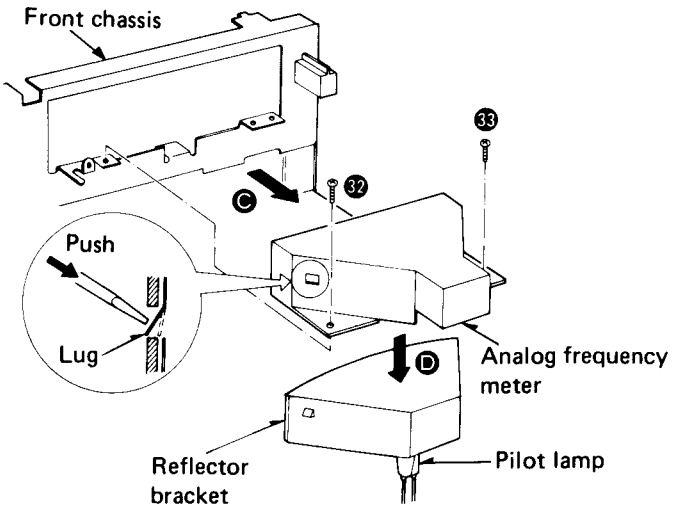
[Fig. 2]



[Fig. 4]



[Fig. 3]



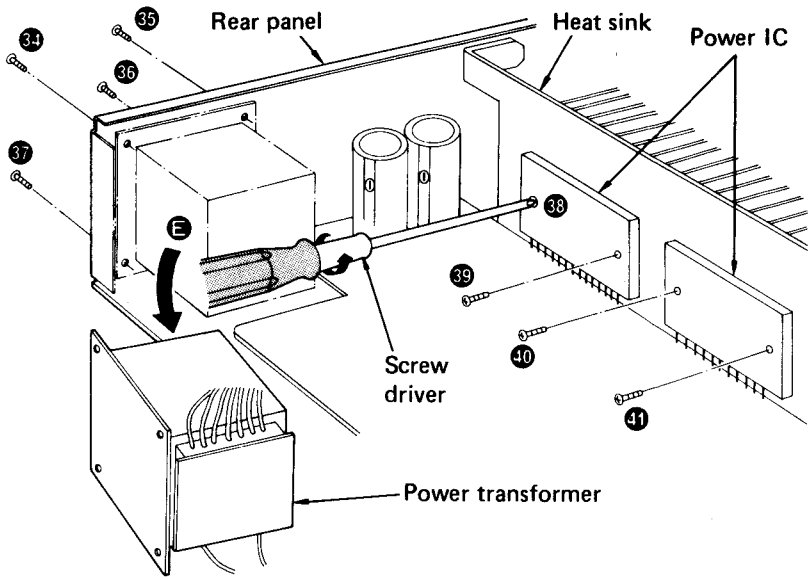
[Fig. 5]

- **How to remove the FM/AM preset tuning printed circuit board and the analog frequency meter**

1. Remove the cabinet.
2. Open the 2 "lead holders" of the lead connector (Fig. 3: ①, ②) and pull out the lead wires.
3. Remove the 2 lock pins (Fig. 3 : ㉗, ㉘) to detach the stereo indicator drive printed circuit board.
4. The lead wires are squeezed in between the front chassis and the stereo indicator drive printed circuit board. Pull them out in the direction of arrow Ⓐ in Fig. 3.
5. Remove the 6 setscrews (Fig. 2 and 3 ㉑ ~ ㉖) of the front panel.
6. Move the front panel in the direction of arrow Ⓑ in Fig. 3.
7. Remove the 3 setscrews (Fig. 4 : ㉙ ~ ㉛) to detach the FM/AM preset tuning printed circuit board.
8. Remove the 2 setscrews (Fig. 5 : ㉜, ㉝) to detach the analog frequency meter in direction of the arrow Ⓒ, and 2 lugs (Reflector bracket of left and right side) to detach the reflector bracket from the analog frequency meter in direction of the arrow Ⓓ.

• How to remove the power IC

1. Remove the cabinet and bottom board. (Refer to "How to remove the cabinet," and "How to remove the bottom board.")
2. Remove the 4 setscrews (Fig. 6 : ㉞ ~ ㊲) to detach the power transformer from rear panel in the direction of the arrow Ⓔ.
3. Unsolder of power IC.
4. Remove the 4 setscrews (Fig. 6 : ㊳ ~ ㊶) used to secure the power IC on the heat sink, and then pull the power IC.
5. When mounting the power IC, apply silicone compound (or equivalent heat diffuser) to the rear side of power IC, and then follow the steps 1 ~ 4 reversely.



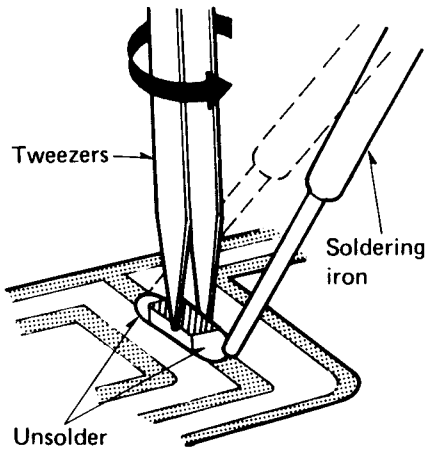
[Fig. 6]

• How to replace chips (resistor, capacitor and jumper)

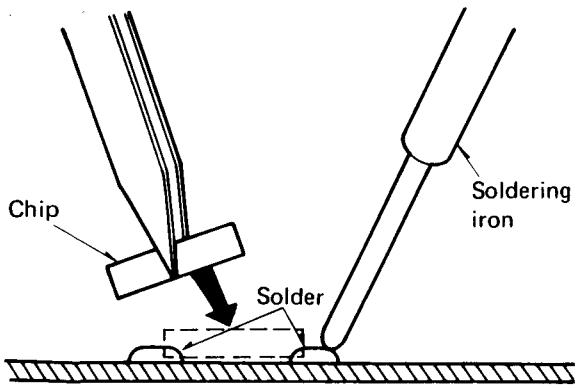
1. Unsolder from chip by using solder sucker.
2. Remove chip with tweezers by rotating it while removing solder as shown in Fig. 7.
3. Solder circuit board first and then solder chip in the direction of the arrow as shown in Fig. 8.

Notes:

1. Do not use chip again which is removed from printed circuit board.
2. Use lead wire with insulator for replacement instead of chip jumper.



[Fig. 7]



[Fig. 8]

• Note for replacing chips

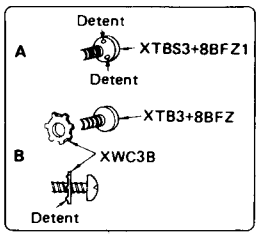
1. Do not heat chips more than three (3) seconds.
2. Be careful not to damage the electrode of chips.
3. Use soldering iron (less than 60W) and tweezers for replacing chips.

• Precautions for repair

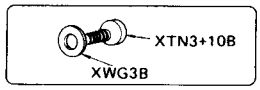
When frequency is not indicated, FL (display tube), FL driver, digit circuit, and micro-computer must be checked by oscilloscope.
In this case, take care not to allow short circuit between IC terminals or application of voltage from measuring instrument to IC terminals.

Note 1: Setscrews ㉑ to ㉖ and ㉚ are screws with detents (Part No. : XTBX3+8BFZ1) as shown in Fig. 9-A in order to make the contact of electric circuit perfect.
Take care not to mix up these screws with other screws. When substituting, use a 3 x 8mm tapping screw (Part No. : XTB3+8BFZ) and toothed lock washer (Part No. : XWC3B) as shown in Fig. 9-B.
The teeth of the lock washer should be positioned on the chassis side.

Note 2: Setscrews ㉜ and ㉝ are plain washer-attached screws (Part No. : XTW3+10H). When substituting, use a 3 x 10mm tapping screw (Part No. : XTN3+10B) and plain washer (Part No. : XWG3B) as shown in Fig. 10.



[Fig. 9]



[Fig. 10]

* Since standardized parts are mentioned in the parts list, they are sometimes different in Part No. and Color from the product parts.

Screw No.	Type	Color	Product Part No.	Figure No.
❶ ~ ❽	⊕ 4 x 8 mm, Tapping	Silver	XTB4+8BFN (Silver type model)	Fig. 1
		Black	XTB4+8BFZ (Black type model)	
❾ ~ ⓫	⊕ 3 x 10 mm, Tapping	Silver	XTB3+8BFN (Silver type model)	Fig. 1
		Black	XTB3+8BFZ (Black type model)	
⓬ ~ ⓮, ⓰ ~ ⓴	⊕ 3 x 12 mm, Tapping (With plain washer)	Red	XTW3+12HFYR	Fig. 2
㉑ ~ ㉖	⊕ 3 x 8 mm, Tapping	Black	XTBS3+8BFZ1	Fig. 2 and 3
㉙, ㉛	⊕ 3 x 10 mm, Tapping	Gold	XTB3+10B	Fig. 4
㉚	⊕ 3 x 8 mm, Tapping	Black	XTBS3+8BFZ1	Fig. 4
㉜, ㉝	⊕ 3 x 10 mm Tapping (With plain washer)	Gold	XTW3+10H	Fig. 5

■ MEASUREMENTS AND ADJUSTMENTS English

AMPLIFIER ADJUSTMENT

● Setting of controls and instruments to be used

* Before the adjustment, R657 and R658 should be turned to counter-clockwise direction.

1. Speaker switch . . . . . Main
2. Sound volume. . . . . 0 (minimum)
3. DC voltmeter (capable to reasure 5mV)

No.	ADJUSTMENTS	DC VOLT METER CONNECTION	PARTS ADJUSTED	ADJUSTING PROCEDURE
1	DC balance	Connect it to "Speaker" terminals of L and R channels.	R655 (L channel) R656 (R channel)	* Adjust it to zero (0) with as small measuring range as possible.
2	Icq	(L channel) Between TP601 and TP603 (minus probe) (R channel) Between TP602 and TP604 (minus probe)	R657 (L channel) R658 (R channel)	* Adjust R657 (L ch) and R658 (R ch) to approx. 5 ~ 6mV after ten minutes warm-up time.

TUNER ADJUSTMENT

Note: AM OSC Coil (L202) and AM 2nd IFT (T202) have been already adjusted, and require no adjustment.

*** Equipment used**

1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. FM signal generator (FM-SG)
4. Distortion analyster
5. Oscilloscope
6. Frequency counter (19 kHz and 108 MHz measurable)
7. FM 300Ω dummy antenna. (Fig. 11)

*** Setting**

1. Maintain line voltage at rated volts.
2. Output of signal generator should be no higher than necessary to obtain an output reading.
3. Pull the AM ferrite-bar antenna (L201) outward.
4. Use a non-metal screwdriver for the adjustment.
5. Set input selector to "tuner" position
6. Set band selector to { AM (AM adjustment) / FM (FM adjustment) } position
7. Set FM muting/FM mode switch to "on/FM auto" position.
8. Set tape monitor switch to "source" position.
9. Set speaker selector to "main" position
10. Set automatic-scan switch to "off" position.
11. Set FM/AM allocation selector to "0.2 MHz/10 kHz" position.
12. Set FM IF band selector to "normal" position.

*** Preparation of FM signal generator (FM-SG)**

1. Connect stereo modulator to FM-SG.
2. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna.
3. The standard input of the set is 60 dB (1mV), 400 Hz 100% modulation (Because of using dummy antenna, SG output must be 12 dB plus (IHF). That is, when input is 60 dB SG output is to be 72 dB.

Step No.	AM/FM SIGNAL GENERATOR CONNECTION	AM/FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM-IF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 220pF capacitor. Common to chassis. (Powerful input)	450 kHz (30% Mod. with 400 Hz)	Frequency of non-interference	Connect AC VTVM or scope to "Speaker" terminals of the set.	T201 (1st IFT)	1. Adjust the input frequency and adjustment points so that the output becomes maximum.
	FM-IF ADJUSTMENT					
2	————	No-Signal	100.1MHz	Connect DC VTVM between TP102 and TP103 through choke coil. (Refer to Fig. 13)	T101 (Discri. IFT)	1. Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range.
	FM-RF AND FM ANALOG FREQUENCY METER ADJUSTMENT					
3	————	No-Signal	90.1 MHz	Connect DC VTVM to TP1 terminal.	L4 (FM OSC Coil)	1. Adjust L4 so that voltage measured by DC voltmeter is 4.49 ± 0.05V.
4	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	90.1 MHz (100% Mod. with 400 Hz) Weak input	90.1 MHz	Connect scope to "Speaker" terminals of the set.	L1 (FM ANT Coil) L2 (FM DET Coil) T1 (FM IFT)	1. Add weak input so that noise is included in the output wave from. 2. Make the adjustment so that the output wave form is vertically symmetrical. (Refer to Fig. 14)
5	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	106.1 MHz (100% Mod. with 400 Hz) Weak input	106.1 MHz	Connect scope to "Speaker" terminals of the set.	CT1 (FM OSC Trimmer)	1. Add weak input so that noise is included in the output wave form. 2. Make the adjustment so that the output wave form is vertically symmetrical. (Refer to Fig. 14) 3. Check step (3) and if it is deflected readjust of L4.
6	————	No-Signal	107.9 MHz	————	VR102 (Frequency meter)	1. Adjust VR102 so that the frequency meter indicates 107.9 MHz. (Refer to Fig. 16)
	AM-RF AND AM ANALOG FREQUENCY METER ADJUSTMENT					
7	————	No-Signal	530 kHz	Connect DC VTVM to TP1 terminal.	L202 (AM OSC Coil)	1. Adjust L202 so that voltage measured by DC voltmeter is 1.25 ± 0.05V.
8	————	No-Signal	1620 kHz	Connect DC VTVM to TP1 terminal.	CT202 (AM OSC Trimmer)	1. Adjust CT202 so that voltage measured by DC voltmeter is 25.0V.
9	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	610 kHz (30% Mod. with 400 Hz)	610 kHz	Connect AC VTVM to scope to "Speaker" terminals of the set.	L201 (ANT Coil)	1. Adjust for maximum output. 2. Adjust ferrite core of L201 by screwdriver.
		1500 kHz (30% Mod. with 400 Hz)	1500 kHz	Connect AC VTVM to scope to "Speaker" terminals of the set.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat step (9) until the frequency correctly matches the dial display.
10	————	No-Signal	1500 kHz	————	VR136 (Frequency meter)	1. Adjust VR136 so that the frequency meter indicates 1500 kHz. (Refer to Fig. 17)
	FM MUTING LEVEL ADJUSTMENT					
11	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Apply 16 dB to antenna terminal)	100.1 MHz (100% Mod. with 400 Hz)	100.1 MHz	Connect AC VTVM or scope to "Speaker" terminals of the set.	VR101 (Muting level)	1. Set the FM muting/FM mode switch to "off/mono". 2. With the FM muting/FM mode switch set to "on/FM auto" adjust VR101 so that the output is given with muting condition released.

	AM/FM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
	FM MPX PILOT (VCO) ADJUSTMENT					
12	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	100.1 MHz (Non-modulated)	100.1 MHz	Connect frequency counter to TP301 terminal through resistor (100kΩ).	VR301 (VCO)	1. Set the FM muting/FM mode switch to "on/FM auto". 2. Adjust VR301 to 19 kHz ± 30 Hz.
	STEREO DISTORTION ADJUSTMENT					
13	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1 MHz (100% Mod. with 400 Hz) (L mode)	100.1 MHz	Connect distortion analyser to "Speaker" terminals of the set.	T1 (IFT)	1. Set the FM muting/FM mode switch to "on/FM auto". 2. Re-adjust the already adjusted T1 within ± 90° from the preset core position so that the distortion of L ch is minimized.
	SEPARATION ADJUSTMENT					
14	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1 MHz (100% Mod. with 1 kHz) (L or R mode)	100.1 MHz	Connect AC VTVM to "Speaker" terminal of the set.	VR302 (Normal IF separation)	1. Set the IF band selector to "normal". 2. Set the FM muting/FM mode switch to "on/FM auto". 3. Adjust VR302 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode and that L output is minimized in R mode.
					VR303 (Narrow IF separation)	1. Set the IF band selector to "narrow". 2. Set the FM muting/FM mode switch to "on/FM auto". 3. Adjust VR303 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode and that L output is minimized in R mode.

■ MESSUNGEN UND JUSTIERUNGEN ■■■■■■■■ Deutsch ■■■■■■■■

* Vor der Abstimmung R657 und R658 bis zum Anschlag entgegen dem Uhrzeigersinn drehen.
* Einstellung der zu benutzenden Regler und Instrumente
  1. Lautsprecherschalter . . . . . .Hauptlautsprecher (main).
  2. Lautstärke . . . . . ."0" (Minimalstellung).
  3. Gleichstromvoltmeter . . . . . .5mV Meßbereich erforderlich.

VERSTÄRKERJUSTIERUNG

Nr.	Einstellungen	Gleichstromvoltmeter-verbindungen	Einstellungspunkte	Einstellungsvorgang
1	Gleichstrom-Balance	An die Lautsprecheranschlüsse des linken und rechten Kanals anschließen.	R655 (L-Kanal) R656 (R-Kanal)	Mit Kleinstmöglichem Meß bereich auf Null (0) justieren.
2	Icq	L-Kanal Zwischen TP601 und TP603 (Minustest) R-Kanal. Zwischen TP602 und TP604 (Minustest)	R657 (L-Kanal) R658 (R-Kanal)	* R657 (L-Kanal) und R658 (R-Kanal) auf ungefähr 6mV, nach 10 Minuten Anwärmezeit, einstellen.

TUNER-JUSTIERUNG

Anmerkung: AM Osz.-Spule (L202) und AM 2. ZFT (T202) sind bereits justiert worden und benötigen keine Justierung.

*** Verwendete Einrichtungen**

1. Elektronische Voltmeter für Wechsel-und Gleichstrom (VTVM)
2. AM (MW)-Meßsender (AM-SG)
3. UKW-Meßsender (FG-SG)
4. Verzerrungsmesser
5. Oszilloskop
6. Signalfrequenzmesser (meßber für 19 kHz und 108 MHz)
7. UKW 75-Ohm Kunstantenne (Abb. 5)

*** Zustand des Gerätes**

1. Netzspannung auf ihren Sollwerthalten.
2. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
3. Die AM-Ferritstabantenne (L201) herausziehen.
4. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.
5. Den Eingangswähler auf die "tuner"-Position stellen
6. Bereichsschalter . . . . {AM (MW Abgleich) / FM (UKW Abgleich)
7. FM Muting/Mode Schalter . . . . . .on/FM auto
8. Monitorschalter . . . . . .source
9. Wellenbereichsschalter . . . . . .main
10. Sendersuchlauf-Schalter . . . . . .off
11. UKW/MW-Frequenzintervallschalter . . . .0.2 MHz/10 kHz
12. FM-ZF-Bandbreitenschalter . . . . . .normal

*** Vorbereitung AM UKW-Messender (FG-SG)**

1. Stereo-Modulator an FM-SG anschließen.
2. SG-Ausgang über 75-Ohm UKW Kunstantenne an den Antenneneingang des Gerätes schließen.
3. Der normale Eingang des Gerätes beträt 60 dB (1mV) 400 Hz 100% Modulation. (Wegen Verwendung der Kunstantenna muß der Signalausgang 12 dB plus (IHF) sein: d.h. beim Eingang von 60 dB soll der Signalausgang 72 dB sein.)

Nr.	AM (MW)/FM (UKW)-MESSENDER ANSCHLUSS	AM (MW)/FM (UKW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	AM (MW)-ZF-ABGLEICH					
1	Einen MW-Signal generator über einen 200pF Kondensator mit dem MW-Antenneneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Starker Eingang)	450 kHz (400 Hz Modulat., 30%)	Kein Empfang	Oszilloskop oder Wechselstrom-Voltmeter über den Lautsprecher schließen.	T201 (1. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adustieren, daß der Ausgang den maximalen Wert erreicht.
	UKW-ZF-ABGLEICH					
2	———	Kein Signal	100.1 MHz	Ein Gleichstromröhrenvoltmeter zwischen TP102 und TP103 über eine Drosselspule verbinden (Siehe Abb. 2)	T101 (Diskriminator FT)	Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	UKW-HF UND ANALOG-FREQUENZMETER-JUSTIERUNG					
3	———	Kein Signal	90.1 MHz	Zwischen TP1 und Erdung Gleichstrom-Voltmeter schließen.	L4 (UKW Osc. Spule)	1. L4 so justieren, daß die mit Voltmeter gemessene Spannung 4.49 ± 0.05V beträgt.
4	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	90.1 MHz (400 Hz Modulat., 100%)	90.1 MHz	Oszilloskop über den Lautsprecher schließen.	L1 (Ant. Spule) L2 (HF Det. Spule) T1 (IFT)	1. Einen schwachen Eingang geben, bei dem Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 4)
5	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	106.1 MHz (400 Hz Modulat., 100%)	106.1 MHz	Oszilloskop über den Lautsprecher schließen.	CT1 (UKW Osc. Trimmer)	1. Einen schwachen Eingang geben, bei dem Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 4) 3. Schritt (3) überprüfen une, falls Abweichung vorhanden, L4 erneut justieren.
6	———	Kein Signal	107.9 MHz	———	VR102 (Analogfrequenz-anzeiger)	1. VR102 so justieren, daß das Frequenzmeter 107.9 MHz anzeigt. (Siehe Abb. 5)
	AM (MW)-HF ANALOG-FREQUENZMETER-JUSTIERUNG					
7	———	Kein Signal	530 kHz	Zwischen TP1 und Erdung Gleichstrom-Voltmeter schließen.	L202 (MW Osc. Spule)	1. L202 so justieren, daß die mit Voltmeter gemessene Spannung 1.25 ± 0.05V beträgt.
8	———	Kein Signal	1620 kHz	Zwischen TP1 und Erdung Gleichstrom-Voltmeter schließen.	CT202 (MW Osc. Trimmer)	1. CT202 so justieren, daß die mit Voltmeter gemessene Spannung 25.0V beträgt.

	AM (MW)/FM (UKW)-MESSENDER		ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	ANSCHLUSS	FREQUENZ				
9	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Anten-neneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwacher Eingang)	610 kHz (400 Hz Modulat., 30%)	610 kHz	Oszilloskop oder Wech-selstrom-Voltmeter über den Lautsprecher schließem.	L201 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L201 mit einem Schraubendreher justieren.
		1500 kHz (400 Hz Modulat., 30%)	1500 kHz	Oszilloskop oder Wech selstrom-Voltmeter über den Lautsprecher schließen.	CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (7) wiederholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.
10	————	Kein Signal	1500 kHz	————	VR136 (Analogfrequenz-anzeiger)	1. VR136 so justieren, daß das Frequenzmeter 1500 kHz anzeigt. (Siehe Abb. 6)
	UKW-STUMMABSTIMMUNGS PEGELANZEIGER					
11	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (16 dB in den Antenn-eneingang leiten.)	100.1 MHz (400 Hz Modulat., 100%)	100.1 MHz	Oszilloskop oder Wechselstrom-Voltmeter über den Lautsprecher schließen.	VR101 (UKW-Muting)	1. Len UKW Muting/UKW-Betriebsartschalter auf "off/mono" einstellen. 2. "Muting" Schalter auf "on/FM auto" stellen. VR101 so einstellen, daß der Ausgang unter Bewirken der Dämpfung gegeben wird.
	UKW-MPX-PILOTABGLEICH (VCO)					
12	Meßsender über eine Kunstantenne an den UKW-Antenneneing-ang schließen. (Mono-Signal)	100.1 MHz (Un-modulierte Welle)	100.1 MHz	Den Signalfrequenz-messer durch 100kΩ Widerstand an Anschluß TP301 anschließen.	VR301 (VCO)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/stereo" einstellen. 2. VR301 so abgleichen, daß Ausgangsfrequenc von TP301 19 kHz ± 30 Hz.
	STEREO-VERZERRUNGSABGLEICH					
13	Meßsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1 MHz (400 Hz Modulat. 100%) L-Betriebsart	100.1 MHz	Klirrfaktor-Meßbrücke über den Lautsprecher schließen.	T1 (IFT)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/FM auto" einstellen. 2. Den schon eingestellten T1 erneut, innerhalb von ±90° von der voreingestellten Kernposition einstellen, sodaß die Verzerrung des linken Kanals minimalisiert wird.
	TRENNUNG-ABGLEICH					
14	Meßsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1 MHz (400 Hz Modulat., 100%) L- oder R-Betriebsart)	100.1 MHz	Wechselstrom-Volt-meter über den Laut-sprecher schließen.	VR302 (Normal IF Separation)	1. FM-ZF-Bandbreitenschalter ..... normal. 2. Den UKW Muting/UKW-Betriebsartschalter auf "on/FM auto" einstellen. 3. VR302 auf minimale Anzeige des R-Ausgangs bei Stereo-modulator in L-(L-Kanal-modulation) Modus, und auf minimale Anzeige des L-Ausgangs in R-Modus abgleichen.
					VR303 (Narrow IF Separation)	1. FM-ZF-Bandbreitenschalter ..... narrow. 2. Den UKW Muting/UKW-Betriebsartschalter auf "on/FM auto" einstellen. 3. VR303 auf minimale Anzeige des R-Ausgangs bei Stereo-modulator in L-(L-Kanal-modulation) Modus, und auf minimale Anzeige des L-Ausgangs in R-Modus abgleichen.

■ MESURAGES ET REGLAGES — Français

RÉGLAGE DE L'AMPLIFICATEUR

* Avant la mise au point, R657 et R658 devront être tournés dans la direction on inverse des aiguilles d'une montre.

* Réglage des commandes et instruments à utiliser
  1. Commutateur du haut-par/eur ..... Principal
  2. Volume du son ..... 0 (minimum)
  3. Voltmètre CC (pouvant mesurer 5mV)

No.	Reglages	Connexions du voltmetre CC	Point de réglage	Procédé de réglage
1	Equilibrage C.C.	Le brancher aux bornes du "Speaker" (haut-parleur) des canaux de gauche et de droite.	R655 (Canal G) R656 (Canal D)	L'ajuster sur zéro (0) avec une plage de mesurage aussi petite que possible.
2	Icq	Canal G. Entre TP601 et TP603 (sonde au moins) Canal D. Entre TP602 et TP604 (sonde au moins)	R657 (Canal G) R658 (Canal D)	Régle les R657 (canal gauche) et R658 (canal droit) sur env. 6mV aprés 10 mm, de prèchaufftage.

REGLAGE DU TUNER

Nota: La bobine oscillatrice de la modulation d'amplitude (L202) et la 2e transformateur de fréquence intermédiaire de la modulation d'amplitude (T202) ont été déjà réglés et ne nécessitent pas de mise au point.

*** Equipment utilisé**
1. Voltmètre électronique de courant altènatif et de courant continu (VTVM).
2. Générateur de signal AM (AM-SG)
3. Générateur du signal FM (FM-SG)
4. Jauge de distorsion.
5. Oscilloscope.
6. Compteur de fréquence (19 kHz et 108 MHz mesurable).
7. Antenne fictive FM, 300 ohms (Fig. 11)

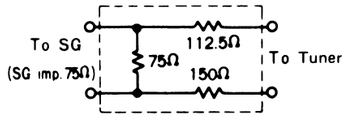
*** Conditions de l'appareil**
1. Conservel la tension du secteur à la tension nominale.
2. Le signal du générateur ne doit pas étre plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
3. Retirer l'antenne à tige de ferrite (L201) de la modulation d'amplitude.
4. Utiliser un tournevis non-métalique pour le réglage.
5. Sélecteur d'entrée sur la position "tuner".
6. Sélecteur de gamme ..... { AM (Alignment AM) / FM (Alignment FM)
7. Commutateur de silencieux/mode. ..... on/FM auto
8. Sélecteurs de contrôle-pilote de la bande. ... source
9. Sélecteurs de gammes d'ondes ..... main
10. Interrupteur de balayage automatique. ..... off
11. Sélecteur de disbution FM/AM ..... 0.2 MHz/10 kHz
12. Placer le sélecteur de l'antenna FM sur position ..... normal

*** Préparation du génerateur de signal FM (FM-SG)**
1. Brancher la commande de réglage stéréophonique à FM-SG,
2. Alimenter la sortie SG à la borne de l'antenne de l'appareil, par l'antenne fictive FM, 300 ohms.
3. L'entrée standard de l'appareil est de 60 dB (1mV), 400Hz, 100% de modulation (à cause de l'utilisation de l'antenna fictive, la sortie SG doit être de plus 12 dB (IHF). Ca qui signifie que quand l'entrée est de 60 dB, la sortie SG doit être de 72 dB.)

No.	AM/FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE FI-AM					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée sous puissante)	450 kHz (modulé à 30% par 400 Hz)	Point sans signal	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	T201 (1 transfo FI)	Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
	REGLAGE DE RF-FM					
2	———	Sans Signal	100.1 MHz	Brancher le voltmètre électronique à c.c. aux bornes TP102 et TP103. (Voir la Fig. 13)	T101 (Transfo FI discri.)	Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
	REGLAGE DU FREQUENCEMETRE ANALOGIQUE FM-RF ET FM.					
3	———	Sans Signal	90.1 MHz	Brancher le voltmètre à courant continu entre TP1 et le prise de terre.	L4 (Bobine Osc.)	1. Régler L4 de façon à ce que la tension mesurée par un voltmètre à C.C. soit de 4.49 ± 0.05V.
4	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	90.1 MHz (modulè à 100% par 400 Hz)	90.1 MHz	Branchez un oscill-oscope sur les bornes de hautparleur de l'amplituner.	L1 (Bobin Ant.) L2 (détecteur) T1 (IFT)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire la réglage de telle sorte que la forme de londe de sortie soit verticalement symétrique. (Voir Fig. 14)

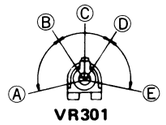
	AM/FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
5	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	106.1 MHz (modulé à 100% par 400 Hz)	106.1MHz	Branchez un oscill-oscope sur les bornes de hautparleur de l'amplituner.	CT1 (Trimmer Osc.)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire la réglage de telle sorte que la forme de londe de sortie soit verticalement symétrique. (Voir Fig. 14) 3. Vérifier l'étape (3) et si elle est déviée régler à nouveau L4.
6	———	Sans Signal	107.9 MHz	———	VR102 (Cadran analogique des fréquences)	1. Régler VR102 de façon à ce que le fréquencemètre indique 107.9 MHz. (Se référer à la Fig. 16)
	REGLAGE DU FREQUENCEMETRE ANALOGIQUE AM-RF ET AM.					
7	———	Sans Signal	530 kHz	Brancher le voltmètre à courant continu entre TP1 et la prise de terre.	L202 (Bobine Osc.)	1. Régler L202 de façon à ca que la tension mesurée par un voltmètre à c.c. soit de 1.25 ± 0.05V.
8	———	Sans Signal	1620 kHz	Brancher le voltmètre à courant continu entre TP1 et la prise de terre.	CT202 (Trimmer Osc.)	1. Régler CT202 de façon à ce que la tension mesurée par un voltmètre à c.c. soit de 25.0V.
9	Brancher la AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée faible)	610 kHz (400 Hz Modulat., 30%)	610 kHz	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	L201 (Bobint Ant.)	1. Régler au maximum de signal de sortie. 2. Régler la noyau ferrite de L201 à l'aide d'un tournevis.
		1500 kHz (400 Hz Modulat., 30%)	1500 kHz	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	CT201 (Trimmer Ant.)	1. Régler au maximum de signal de sortie. 2. Refaire les étapes (9) jusqu'à ce que le fréquence s'aligne correctement avec l'affichage du cadran.
10	———	Sans Signal	1500 kHz	———	VR136 (Frequency meter)	1. Régler VR136 de façon à ce que le fréquencemètre indique 1500 kHz. (Se référer à la Fig. 17)
	REGLAGE DU SEUIL DU SILENCIEUX D'ACCORD					
11	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Appliquer 16 dB à la borne de l'antenne.)	100.1 MHz (modulé à 100% par 400 Hz)	100.1 MHz	Branchez un oscill-oscope sur les bornes de hautparleur de l'amplituner.	VR101	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur ''off/mono''. 2. Avec le commutateur de mode/réglage silencieux FM réglé sur la position ''on/auto'', régler le VR101 de telle sorte que la sortie fournie avec le réglage silencieux en position déclenchée.
	REGLAGE (VCO) PILOTE MULTIPLEX FM					
12	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal monoscous-tique).	100.1 MHz (Non modulé)	100.1 MHz	Brancher le compteur de fréquences à la borne TP301 par l'intermédiaire d'une résistance de 100kΩ	VR301 (VCO)	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur ''on/stereo''. 2. Régler VR301 de telle sorte que la fréquence de sortie de TP301 soit de 19 kHz ± 30 Hz.
	REGLAGE DE LA DISTORSION STEREO					
13	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1 MHz (modulé à 100% par 400 Hz) (Mode G)	100.1 MHz	Branchez un distorsion métre sur les bornes de haut-parleur de appareil.	T1 (IFT)	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur ''on/auto''. 2. Rerégler le T1 déjà réglé, à ± 90° de la position préréglée du noyau de telle sorte que la distorsion du canal gauche soit minimale.

FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
BRANCHEMENT	FREQUENCE				
REGLAGE DE LA SEPARATION DES CANAUX					
Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1 MHz (modulé à 100% par 400 Hz) (Mode G ou D)	100.1 MHz	Branchez un oscilloscope sur les bornes de hautparleur de l'ampliturer.	VR302 (Normal IF Separation)	1. Interrupteur de gamme FM-IF.....normal. 2. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 3. Régler VR302 de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit.
				VR303 (Narrow IF Separation)	1. Interrupteur de gamme FM-IF.....narrow. 2. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 3. Régler VR303 de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit.



300Ω FM Dummy Antenna

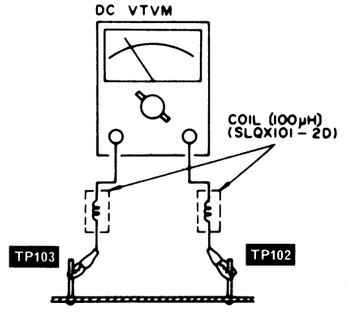
[Fig. 11]
Abb. 1



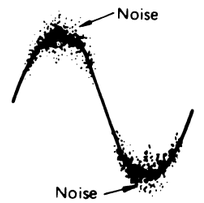
VR301

A – B, D – E Stereo OFF Position.
B – D Stereo ON Position (indicator Lighting).
C Adjust Point of Pilot Circuit.

[Fig. 12]
Abb. 2

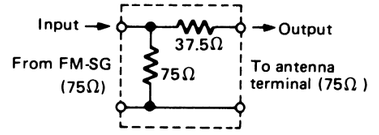


[Fig. 13]
Abb. 3



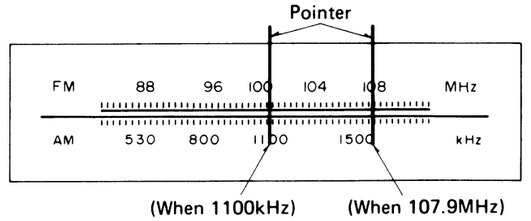
AF output wave form

[Fig. 14]
Abb. 4

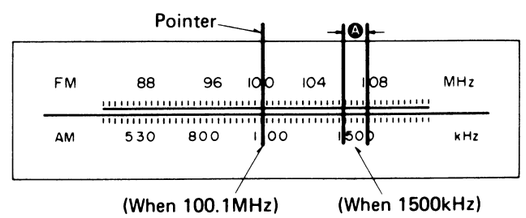


(75Ω FM dummy antenna)

[Fig. 15]
Abb. 5



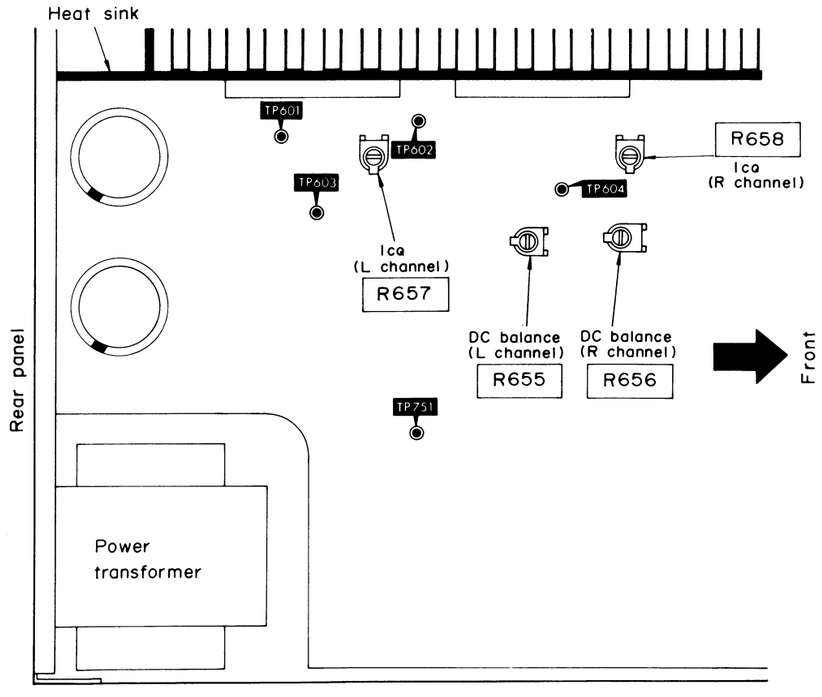
[Fig. 16]
Abb. 6



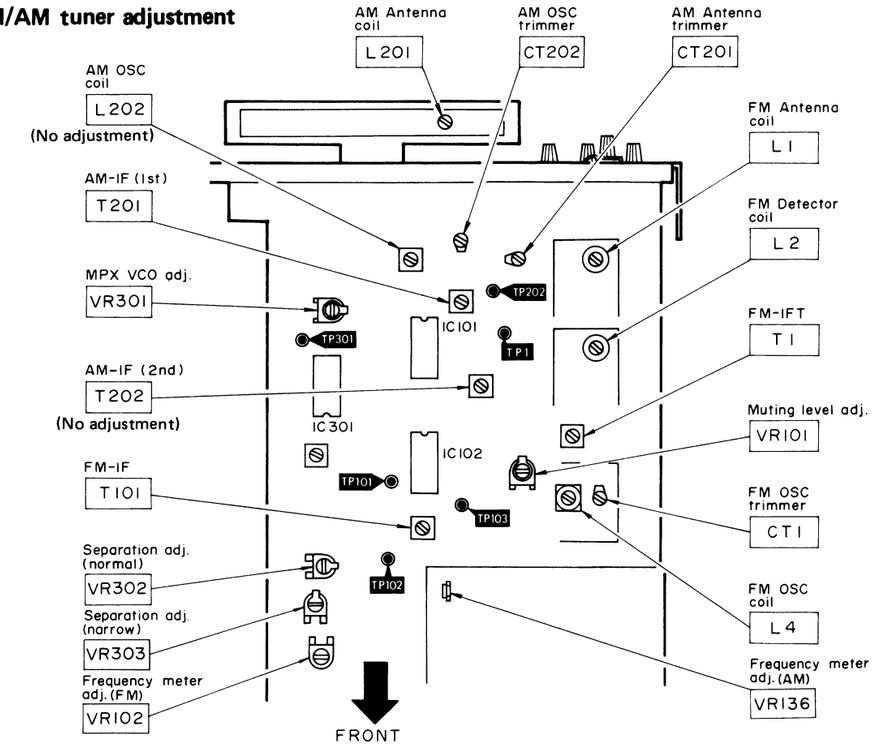
[Fig. 17]
Abb. 7

■ ADJUSTMENT POINTS

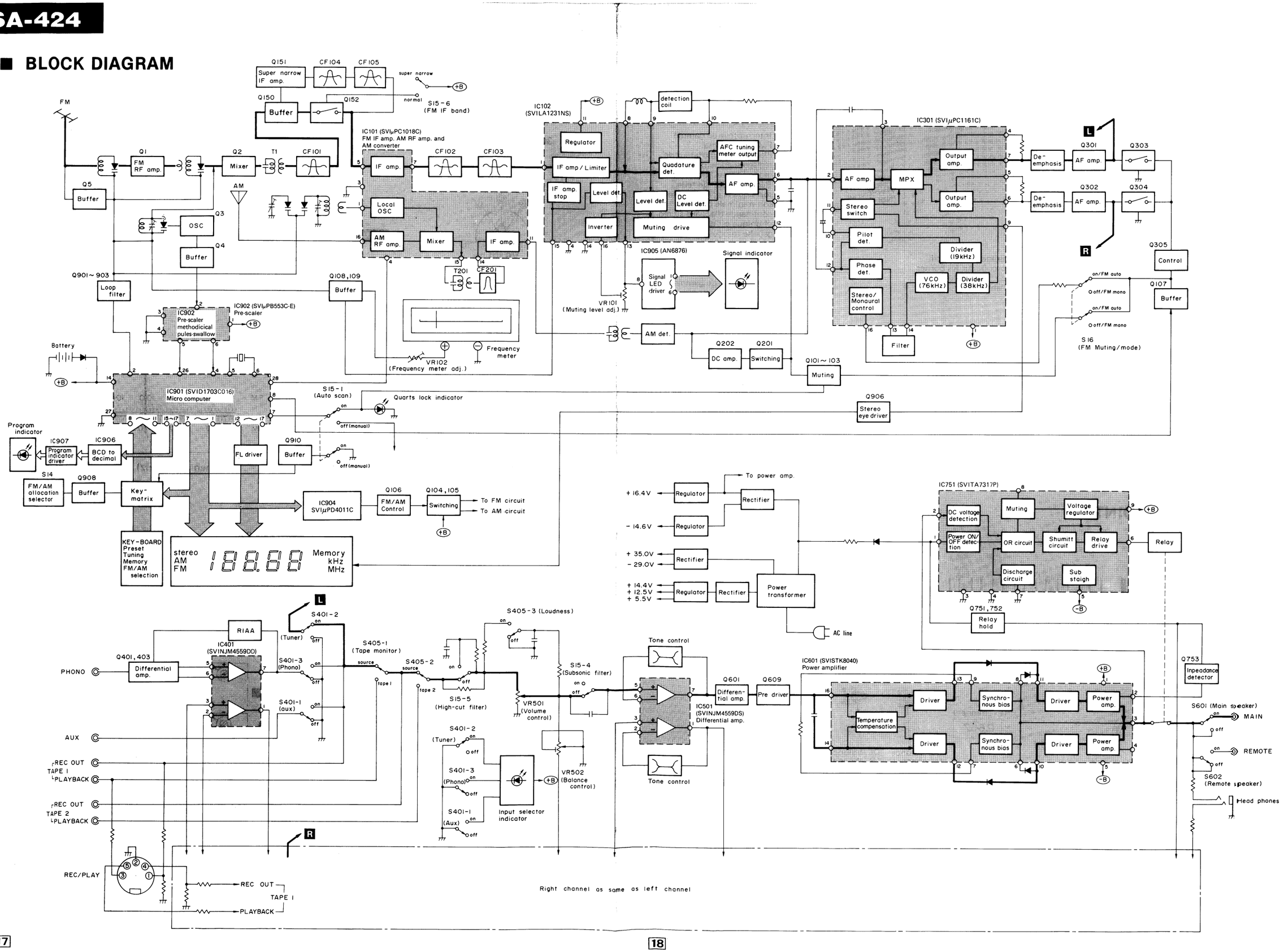
• Amplifier adjustment



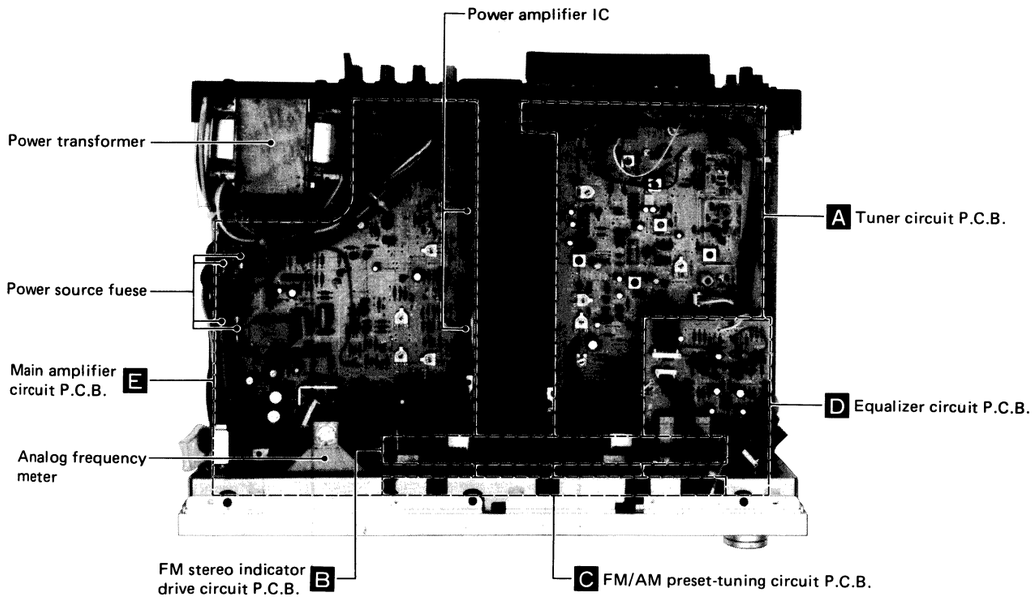
• FM/AM tuner adjustment



■ BLOCK DIAGRAM



■ LOCATION OF PRINTED CIRCUIT BOARDS


Power amplifier IC
Power transformer
A Tuner circuit P.C.B.
Power source fuese
Main amplifier circuit P.C.B. E
D Equalizer circuit P.C.B.
Analog frequency meter
FM stereo indicator drive circuit P.C.B. B
C FM/AM preset-tuning circuit P.C.B.

■ REPLACEMENT PARTS LIST...Electric Parts

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUITS			
IC101		RVIUPC1018CF	IC, FM IF Amp. AM RF Amp. and AM Converter
IC102		SVILA1231NS	IC, FM IF Detector
IC301		SVIUPC1161C	IC, FM Multiplex
IC401		SVINJM4559DD	IC, Equalizer Amplifier
IC501		SVINJM4559DS	IC, Differential Amplifier
IC601, 602		SVISTK8040	IC, Power Amplifier
IC751		SVITA7317P	IC, Relay Driver
IC901		SVID1703C016	IC, Micro-Computer
IC902		SVIUPB553C–E	IC, Pre-Scaler
IC903		SVITA57	IC, FL Driver
IC904		SVIUPD4011C	IC, Nand Gate
IC905		AN6876	IC, Signal L.E.D Driver
IC906		SVIUPD4035C	IC, Gate
IC907		SVIM74LS42P	IC, Decoder
TRANSISTORS			
Q1		2SK195–H1	Transistor, FM RF Amplifier
Q2		**2SC1674–M**	Transistor, FM Mixer
Q3, 4		**2SC1675–L**	Transistor, FM Oscillator and Buffer
Q5, [XL] except		**2SC945–Q**	Transistor, Muting
Q101, 102, 106 ~ 109, 152, 201 303, 304		2SC1815–Y	Transistor, Switching (Use in ranks Y or O)
Q103 ~ 105, 202 301, 302, 305		2SA1015–Y	Transistor, Switching (Use in ranks Y or O)
Q150, 151		2SC829–C	Transistor, FM IF Amplifier
Q401 ~ 404		2SC2320L–F	Transistor, Differential Amplifier (Use in ranks F or G)
Q601, 602		**2SA798A–G2**	Transistor, Differential Amplifier (Use in ranks F2 or G2)
Q603 ~ 606 704, 705		2SC1815–Y	Transistor, Current Mirror (Use in ranks Y or O)
Q607, 608, 752 753, 754		2SC1845–E	Transistor, Current Detector (Use in ranks E or F)
Q609, 610, 701		2SC2631–R	Transistor, Regulator (Use in ranks R, S or T)
Q702		2SA1123–R	Transistor, Regulator (Use in ranks R, S or T)
Q703		2SD880–Y	Transistor, Regulator (Use in ranks Y or O)
Q751		2SA992–E	Transistor, Current Detector
Q901 ~ 903		2SC945–Q	Transistor, Loop Filter
Q904, 905		2SC1815–Y	Transistor, Switching
Q906 ~ 910		2SA1015–Y	Transistor, Switching FL Driver (Use in ranks Y or O)
DIODES			
D1 ~ 3		**MA320G1–N**	Diode, Variable Capacitor (for FM)
D101 ~ 104, 150, 151, 202, 204 205, 752, 901 ~ 918, 933 ~ 936, 937, 938		**MA162A**	Diode, Switching
		LN313GP	Light Emitting Diode, Green
D105, 203		**20A90**	Diode, Detector
D201		SVDBB312E	Diode, Variable Capacitor (for AM)
D401 ~ 403		LN224RP	Light, Emitting Diode, Red
D601, 602		**MA162A**	Diode
D603, 604		**MA27A2**	Diode
D605, 606		**MA162A**	Diode
D607 ~ 614		**20A90**	Diode, Detector
D701 ~ 704	⚠	**SVDS3V40**	Rectifier
D705, 706		SVDMZL316A	Diode, 16V Zener
D707, 708, 711 751	⚠	**SVDSR1K2**	Rectifier
D709		SVDMZ333B	Diode, 33V Zener
D710		SVDMZ327B	Diode, 27V Zener
D712		SVDMZ306C2	Diode, 6V Zener
D753 ~ 755		**MA162A**	Diode
D919		SVDMZ306B	Diode, 6V Zener
D920		LN220RP	Light Emitting Diode, Red
D921 ~ 925		LN413YP	Light Emitting Diode, Red
D926 ~ 932		LN831RP	Light Emitting Diode, Red

Ref. No.		Part No.	Part Name & Description
COILS and TRANSFORMERS			
L1		SLA4P55–P	Coil, FM Antenna
L2		SLD4P53–P	Coil, FM Detector
L3		**RLQY15G5**	Coil, Choke
L4		SLO4N21	Coil, FM Local Oscillator
L5		**RLQY25S2**	Coil, Choke
L101		SLMIC61–P	Coil,
L201		SLF2C33	Coil, AM Ferrite Bar Antenna
L202		SLO2C29–P	Coil, AM Local Oscillator
L601, 602		SLQY15G–30	Coil, Choke
T1		SLI4C109	Transformer, FM IF
T101		SLI4C527–Z	Transformer, FM IF, Discriminator
T201		SLI2C127	Transformer, AM IF
T202		SLI2C413R	Transformer, AM IF
T701	⚠	SLT5P219–W	Transformer, Power Source
CERAMIC FILTERS			
CF101 ~ 104		SVFE107MM–B	Ceramic Filter, FM10.68MHz Blue
CF105		SVFE107MZ2–B	Ceramic Filter, FM10.675MHz Blue
CF201		SVFSFP450HT	Ceramic Filter, AM 450kHz
VARIABLE RESISTORS			
VR101		**EVTS3MA00B54**	Muting Level Adjustment, 50kΩ (B)
VR102		**EVNM4AA00B53**	Frequency Meter Adjustment, 5kΩ (B)
VR136		**EVNMOAA00B54**	AM Frequency Meter Adjustment, 50kΩ (B)
VR301		**EVTS3MA00B14**	PLL MPX Adjustment, 10kΩ (B)
VR302, 303		**EVTS3MA00B55**	Separation Adjustment, 500kΩ (B)
VR501		EWJGFA066B15	Volume Control, 100kΩ (B)
VR502		EWHHMA551G15	Balance Control, 100kΩ (G)
VR503		EWJFCO066C15	Treble Control, 100kΩ (C)
VR504		EWJFCY066530	Bass Control, 100kΩ
R655, 656		**EVTS3MA00B13**	DC Adjustment, 1kΩ (B)
R657, 658		**EVTS3MA00B14**	ICQ Adjustment, 10kΩ (B)
VARIABLE CAPACITORS			
CT1		ECV1ZW06X53N	Trimmer, FM Local Oscillator
CT201, 202		ECV1ZW20X53N	Trimmer, AM Antenna
COMPONENT COMBINATIONS			
Z201		EXRF203Z471S	Component Combination 0.01μF, (X2), 470Ω
Z601, 602		ECQJ0517	Component Combination, 0.047μF, 10Ω
Z701 ~ 703		RXAF103P22HD	Component Combination, 0.01μF (X2)
Z901		EXFP7331MH	Component Combination, 330pF (X4)
Z902, 903		EXBP87104K	Component Combination, 100kΩ (X7)
Z904		EXBP83104M	Component Combination, 100kΩ (X3)
THERMISTER			
TH601, 602		ERTD2ZHL103S	Thermister, Thermal Compensation, 10kΩ
CRYSTAL			
X901		SVQ43U452	Crystal, 4.5MHz Counter Oscillator
LAMP			
PL1	⚠	XAMR73S200A	Lamp, Frequency Meter, 6.3V, 0.25A
FUSES			
F1	⚠	XBA2C31TRO	Fuse, Power Source, T 3.15A (250V)
F2	⚠	XBA2C16TRO	Fuse, Power Source, T 1.6A (250V)
F3, 4	⚠	XBA2C06TRO	Fuse, Power Source, T 630mA (250V)
FLUORESCENT DISPLAY TOBE			
FL		SAD7MT29ZA	Fluorescent Display Tube
RELAY			
RLY751	⚠	SSY69	Relay, Speaker Output

Ref. No.		Part No.	Part Name & Description			
METER						
		SSM173–1	Meter, Frequency			
SWITCHES						
S1 ~ 12		SSG1	Switch, Memory/Preset/FM-AM/Manual			
S14		SSS43	Switch, FM/AM Allocation			
S15		SSH539	Switch, Subsonic, FM Muting Auto Scan			
S401		SSH3009	Switch, Input Selector			
S405		SSH3005	Switch, Tape Monitor & Loudnes			
S601, 602		SSH2001	Switch, Speakers Selector			
S701	⚠	ESB90159S	Switch, Power Source			
S702	⚠	ESE37200	Switch, Voltage Adjuster			
RESISTORS						
R1 except for [XL]		**ERD50TJ823**	Carbon,	82kΩ,	1/2W,	± 5%
R2		RRD18XK472	Chip,	4.7kΩ,	1/8W,	± 10%
R3		RRD18XK104	Chip,	100kΩ,	1/8W,	± 10%
R4		RRD18XK100	Chip,	10Ω,	1/8W,	± 10%
R5		RRD18XK101	Chip,	100Ω,	1/8W,	± 10%
R6		RRD18XK472	Chip,	4.7kΩ,	1/8W,	± 10%
R7		RRD18XK474	Chip,	470kΩ,	1/8W,	± 10%
R8		RRD18XK102	Chip,	1kΩ,	1/8W,	± 10%
R9		**ERD25FJ331**	Carbon,	330Ω,	1/4W,	± 5%
R10		RRD18XK331	Chip,	330Ω,	1/8W,	± 10%
R11		RRD18XK103	Chip,	10kΩ,	1/8W,	± 10%
R12		RRD18XK333	Chip,	33kΩ,	1/8W,	± 10%
R13		RRD18XK272	Chip,	2.7kΩ,	1/8W,	± 10%
R14		RRD18XK104	Chip,	100kΩ,	1/8W,	± 10%
R15		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	± 5%
R16		RRD18XK332	Chip,	3.3kΩ,	1/8W,	± 10%
R17		RRD18XK273	Chip,	27kΩ,	1/8W,	± 10%
R18 except for [XL]	⚠	**ERD50FJ472**	Carbon,	4.7kΩ,	1/2W,	± 5%
R101		RRD18XK102	Chip,	1kΩ,	1/8W,	± 10%
R102		RRD18XK391	Chip,	390Ω,	1/8W,	± 10%
R103		RRD18XK561	Chip,	560Ω,	1/8W,	± 10%
R104		RRD18XK391	Chip,	390Ω,	1/8W,	± 10%
R105		**ERO25CKF1002**	Metal Film,	10kΩ,	1/4W,	± 1%
R108		RRD18XK273	Chip,	27kΩ,	1/8W,	± 10%
R109		**ERD25FJ470**	Carbon,	47Ω,	1/4W,	± 5%
R110		RRD18XK103	Chip,	10kΩ,	1/8W,	± 10%
R111		RRD18XK102	Chip,	1kΩ,	1/8W,	± 10%
R112		RRD18XK153	Chip,	15kΩ,	1/8W,	± 10%
R113		RRD18XK223	Chip,	22kΩ,	1/8W,	± 10%
R114		RRD18XK103	Chip,	10kΩ,	1/8W,	± 10%
R115		RRD18XK333	Chip,	33kΩ,	1/8W,	± 10%
R116		RRD18XK103	Chip,	10kΩ,	1/8W,	± 10%
R117		RRD18XK223	Chip,	22kΩ,	1/8W,	± 10%
R118		RRD18XK561	Chip,	560Ω,	1/8W,	± 10%
R119		RRD18XK222	Chip,	2.2kΩ,	1/8W,	± 10%
R120		RRD18XK561	Chip,	560Ω,	1/8W,	± 10%
R121		**ERD25TJ473**	Carbon,	47kΩ,	1/4W,	± 5%
R122		RRD18XK103	Chip,	10kΩ,	1/8W,	± 10%
R123		RRD18XK332	Chip,	3.3kΩ,	1/8W,	± 10%
R124		**ERD25TJ333**	Carbon,	33kΩ,	1/4W,	± 5%
R125, 126		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	± 5%
R128		RRD18XK473	Chip,	47kΩ,	1/8W,	± 10%
R130		RRD18XK472	Chip,	4.7kΩ,	1/8W,	± 10%
R133		RRD18XK102	Chip,	1kΩ,	1/8W,	± 10%
R134		RRD18XK153	Chip,	15kΩ,	1/8W,	± 10%
R135		RRD18XK823	Chip,	82kΩ,	1/8W,	± 10%
R137		RRD18XK104	Chip,	100kΩ,	1/8W,	± 10%
R138		RRD18XK683	Chip,	68kΩ,	1/8W,	± 10%
R139		RRD18XK272	Chip,	2.7kΩ,	1/8W,	± 10%
R150		RRD18XK102	Chip,	1kΩ,	1/8W,	± 10%
R151		RRD18XK392	Chip,	3.9kΩ,	1/8W,	± 10%
R152		RRD18XK102	Chip,	1kΩ,	1/8W,	± 10%
R153		RRD18XK681	Chip,	680Ω,	1/8W,	± 10%
R154		RRD18XK271	Chip,	270Ω,	1/8W,	± 10%
R155, 156		RRD18XK221	Chip,	220Ω,	1/8W,	± 10%
R157		RRD18XK221	Chip,	220Ω,	1/8W,	± 10%
R158		RRD18XK681	Chip,	680Ω,	1/8W,	± 10%
R159		RRD18XK332	Chip,	3.3kΩ,	1/8W,	± 10%
R160		RRD18XK153	Chip,	15kΩ,	1/8W,	± 10%
R161, 162		RRD18XK682	Chip,	6.8kΩ,	1/8W,	± 10%
R197		**ERO25CKF1502**	Metal Film,	15kΩ,	1/4W,	± 5%
R201		**ERD25FJ331**	Carbon,	330Ω,	1/4W,	± 5%
R202		RRD18XK331	Chip,	330Ω,	1/8W,	± 10%

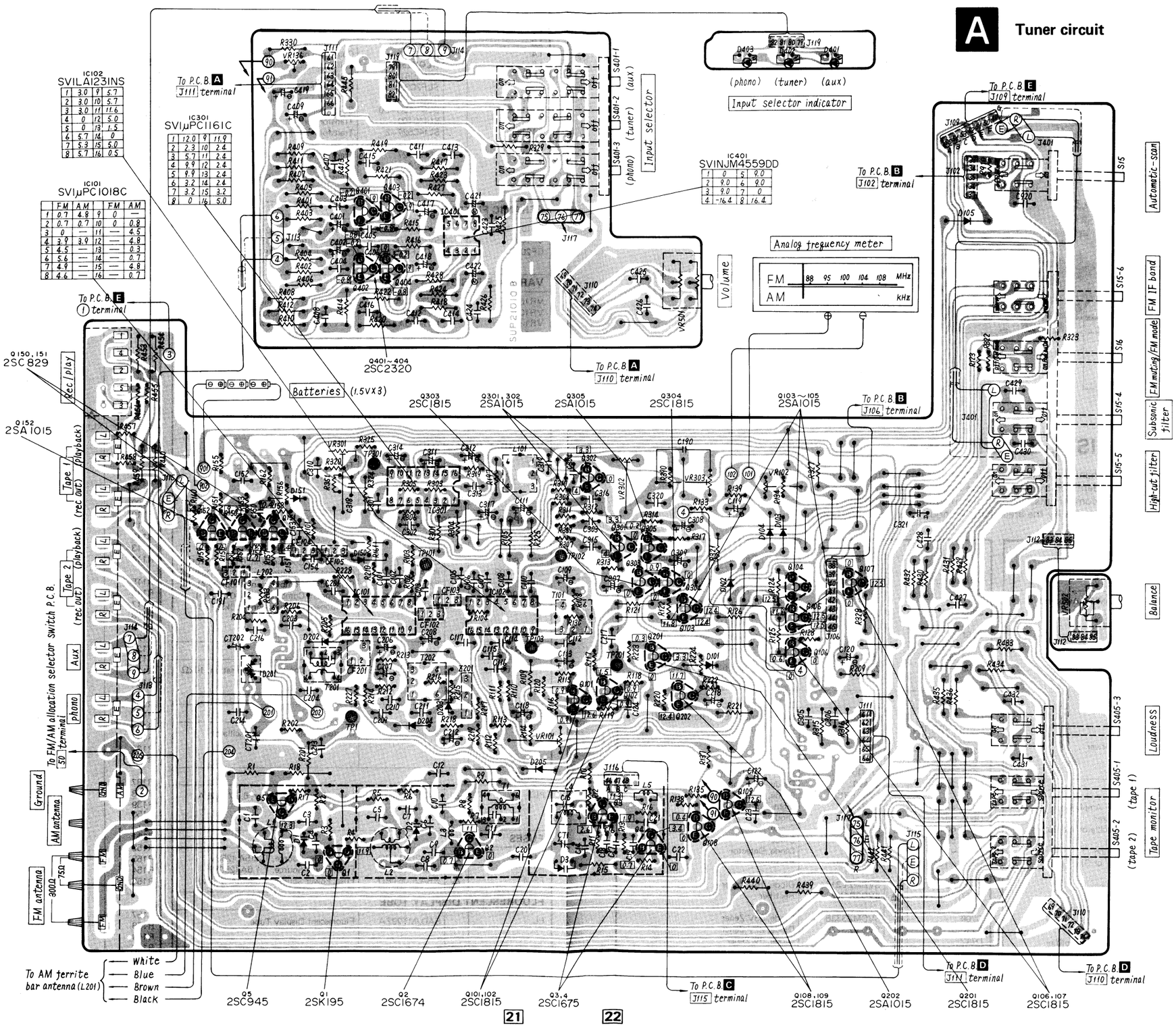
Continued on page 32

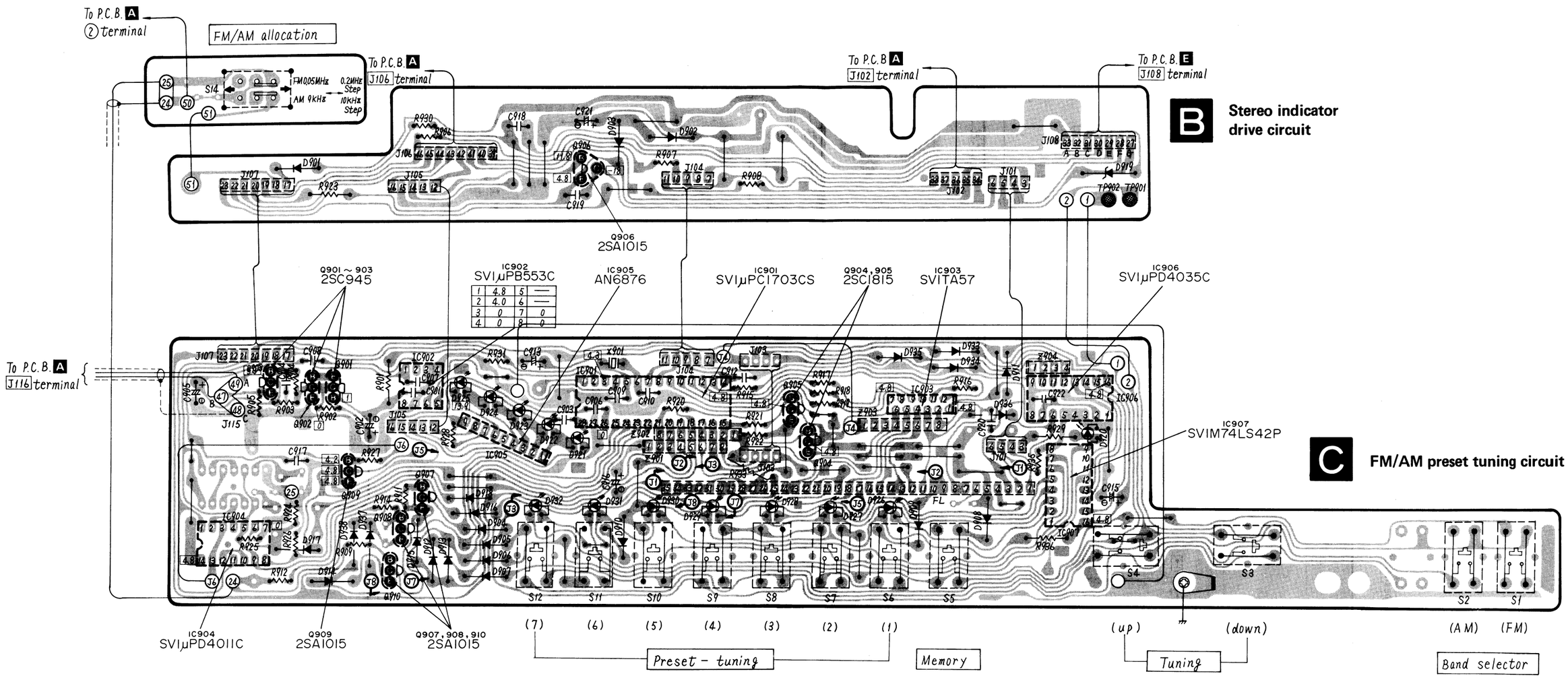
■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

D Equalizer circuit

Ground (Earth) lines

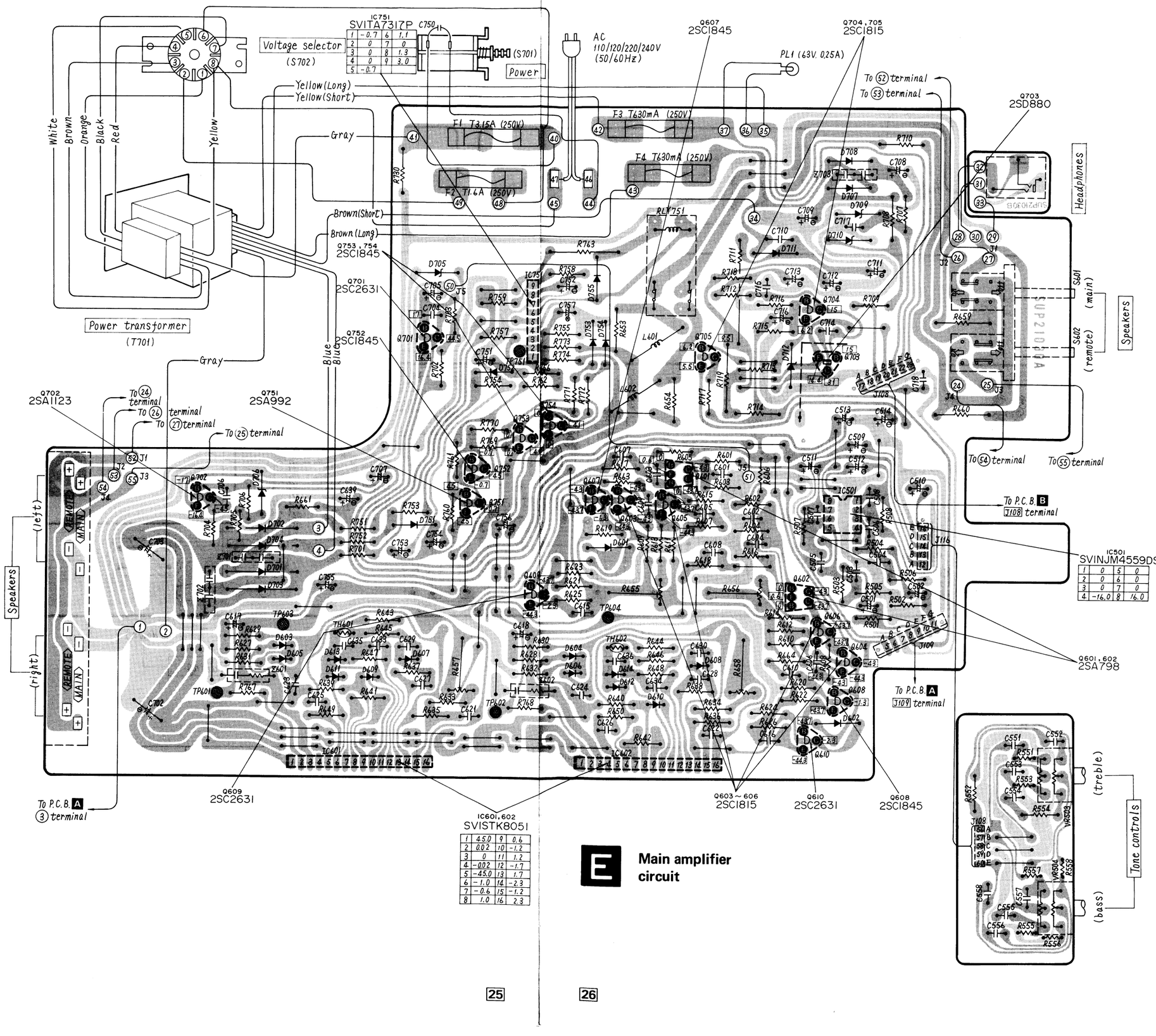
A Tuner circuit





• Terminal guide of transistors, diodes and IC's

SVIμPC1018C, SVIμPC1161C SVILA123INS, SVIM74LS42P	SVINJM4559	SVIμPB553C-E	SVITA57	AN6876	2SC1674, 2SC1675 2SC1815, 2SA1015 2SC945, 2SC2320 2SC1845, 2SC2631 2SA1123, 2SA992	2SD880	MA320GIN	SVDMZ□□□□	LN220RP
SVISTK8040	SVITA7317P	SVIμPD4011C, SVIμPD4035C	SVID1703C016	2SK195		2SA798A	SVDBB312	LN213RP, LN313GP, LN224RP	LN831RP



1	-0.7	6	1.1
2	0	7	0
3	0	8	1.3
4	0	9	3.0
5	-0.7		

1	0	5	0
2	0	6	0
3	0	7	0
4	-16.0	8	16.0

1	45.0	9	0.6
2	0.02	10	-1.2
3	0	11	1.2
4	-0.02	12	-1.7
5	-45.0	13	1.7
6	-1.0	14	-2.3
7	-0.6	15	-1.2
8	1.0	16	2.3

E **Main amplifier circuit**

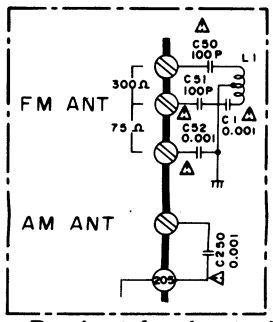
■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

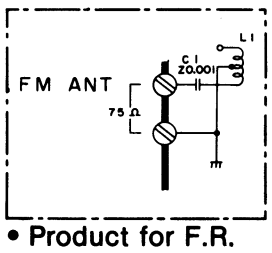
Notes:

1. **S1, 2** : Band selectors switch. [S1 – FM, S2 – AM]
2. **S3, 4** : Tuning switch [S3 – down, S4 – up]
3. **S5** : Memory switch.
4. **S6 ~ 12** : Preset-tuning switch. [S6 – 1 ch, S7 – 2 ch, S8 – 3 ch, S9 – 4 ch, S10 – 5 ch, S11 – 6 ch, S12 – 7 ch]
5. **S14** : FM/AM allocation switch in "**FM 0.2MHz/AM 10kHz step**" position. FM 0.05MHz/AM 9kHz step ⟷ FM 0.2MHz/AM 10kHz step
6. **S15-1** : Automatic-scan switch in "**on**" position. on ⟷ off (manual)
7. **S15-3** : FM mutin on/FM
8. **S15-4** : Subsonic
9. **S15-5** : High-cut
10. **S15-6** : FM IF ba
11. **S401-1 ~ 401-3** : Input sele [S401
12. **S405-1, 405-2** : Tape-mor [S405
13. **S405-3** : Loudness
14. **S601, 602** : Speaker s [S601
15. **S701** : Power swi

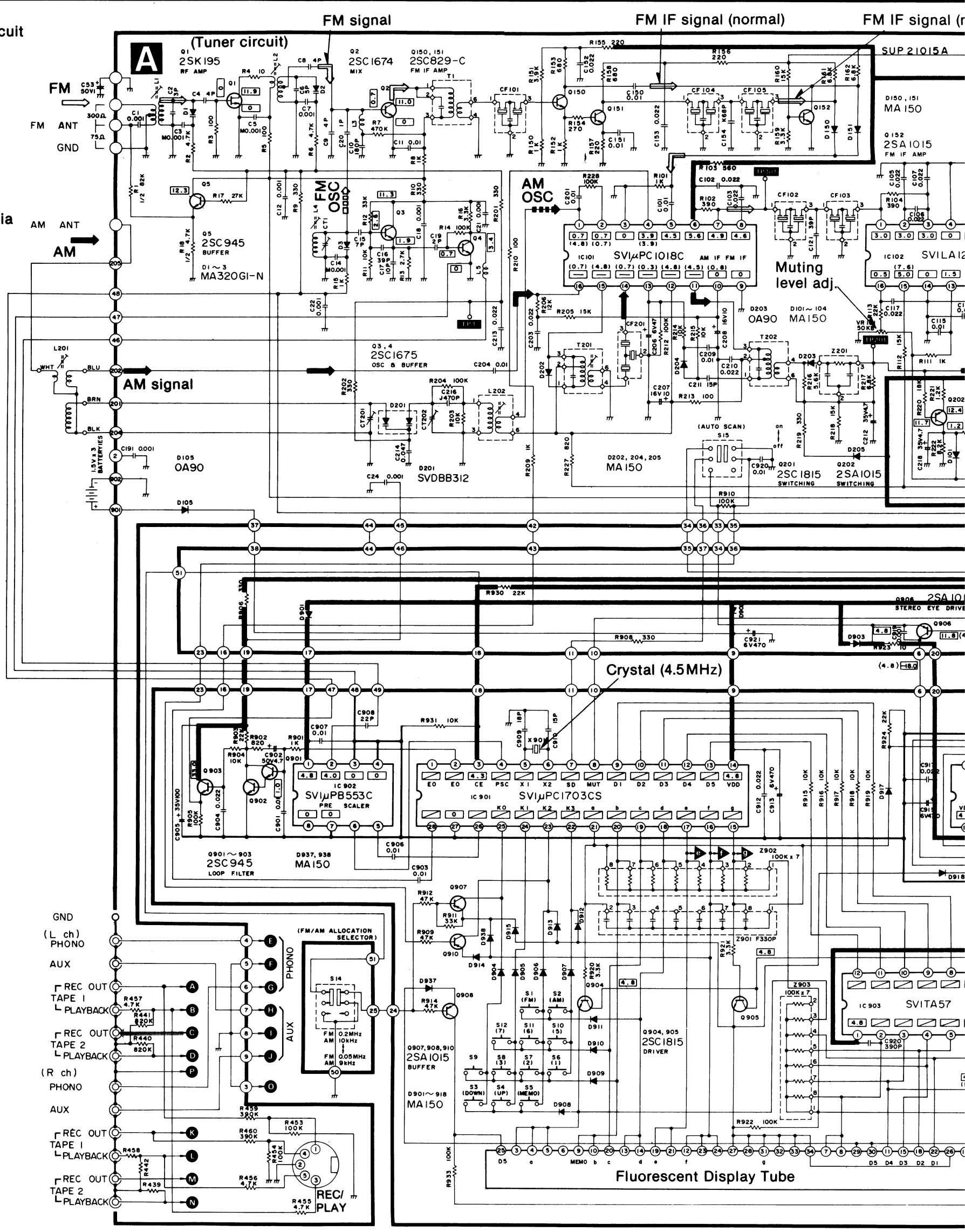
Antenna terminal circuit



• Product for Australia [XL] only



• Product for F.R. Germany [EG] only



FM muting/FM mode switch in "**on/FM auto**" position.
on/FM auto ⟷ off/FM mono
Subsonic filter switch in "**off**" position.
High-cut filter switch in "**off**" position.
FM IF band switch in "**normal**" position.
: Input selectors switch in "**tuner**" position.
[S401-1 – aux, S401-2 – tuner, S401-3 – phono]
Tape-monitor selectors switch in "**source**" position.
[S405-1 – tape 1, S405-2 – tape 2]
Loudness switch in "**off**" position.
Speaker selectors switch in "**main**" position.
[S601 – main, S602 – remote]
Power switch in "**on**" position.

16. **S702** : Voltage selector switch in "**240V**" position.
110V⟷120V⟷220V⟷240V
17. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
* Figures in ▭ stand for DC voltage in FM/AM signal reception mode.
* Figures in 〈 〉 stand for DC voltage in FM stereo signal reception mode.
* Figures in ⌜ ⌟ stand for DC voltage in FM (no signal) muting to on mode.
* Figures in ( ) stand for DC voltage with the band selectors circuit set at AM.
* ▱ marked terminal : 5V or 0V output.
18. Transistor and IC terminals which carry no voltage indication emit 5V pulse waveforms or are subject to change according to the frequency or input signal levels.

19. Signal lines
⇨ FM composite signal
Audio frequency signal
Positive voltage lines
➡/⇢ AM
20. Important safety notice:
Components identified by ⚠ make have special characteristic
When replacing any of these components, use only manufactu

8 9 10 11 12 13 14

signal (narrow)

Audio frequency signal (R channel)

Narrow IF separation adj.

Normal IF separation adj.

MPX VOC adj.

Frequency meter (FM) adj.

Frequency meter (AM) adj.

Audio frequency sig (L channel)

(FM/AM preset tuning circuit)

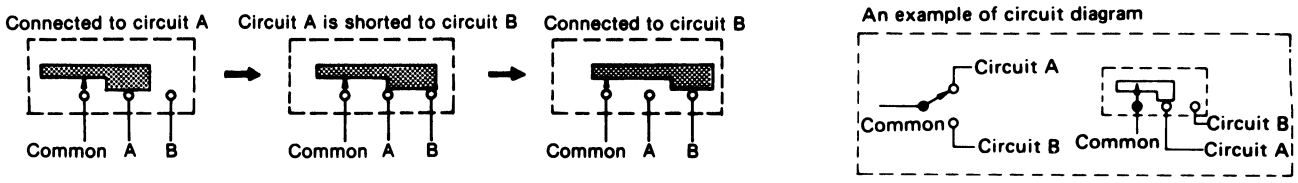
(Equalizer circuit)

→/▪▪▪▪→ AM composite signal

characteristics important for safety.
nly manufacturer's specified parts.

Shorting Switch

This unit uses a shorting switch. As illustated below, the circuit is shorted to the next circuit without being opened.
In the circuit diagram, the shaded area represents the common terminal.



14 15 16 17 18 19 20 21

E (Main amplifier circuit)

ICQ adj. (L channel)

DC balance adj. (L channel)

ICQ adj. (R channel)

DC balance adj. (R channel).

+16.4V line

+12.5V line

+5.5V line

+13.9V line

+35.0V line

IC501 SVINJM4559DS TONE CONTROL AMP

IC401 SVINJM4559DD EQUALIZER

IC601 SVISTK8040 SYNCHRONOUS BIAS & P AMP.

IC602 SVISTK8051

Q601, 602 2SA798 DIFFERENTIAL AMP

Q607, 608 2SC1845 EMITTER FOLLOWER

Q603~606 2SC1815 CURRENT MIRROR

Q609, 610 2SC2631 PRE DRIVE

Q701 2SC2631 REGULATOR

Q702 2SA1123 REGULATOR

D705, 706 SVDMZL316A

D707, 708, 711 SVDSR1K2

D601, 602, 605, 606 MA162A

D603, 604 SVDMA26-2

D607~610 20A90

D401~403 LN224RP INPUT SELECTOR Indicator (phono) (tuner) (aux)

D701~704 SVDS3V20

D709 SVDMZ333B

D710 SVDMZ327B

D712 SVDMZ306CZ

Q703 2SD880

Q704, 705 2SC1815

D751 SVDSR1K2

D752 MA150

Q751 2SA992 RELAY HOLD

Q752 2SC1845 RELAY HOLD

F4 T630mA

F3 T630mA

T701

F2 T1.6A

F1

PL1 (63V 0.25A)

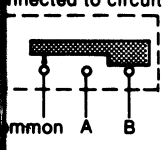
(BALANCE)

(SUBSONIC FILTER)

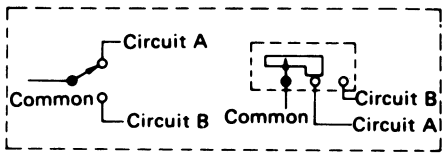
circuit is shorted

mon terminal.

nnected to circuit B



An example of circuit diagram



18 19 20 21 22 23 24

A B C D E F G H

ICQ adj. (L channel)

DC balance adj. (L channel)

ICQ adj. (R channel)

DC balance adj. (R channel).

IC501 SVINJM4559DS TONE CONTROL AMP

IC601 SVISTK8040 SYNCHRONOUS BIAS & POWER AMP.

IC602 SVISTK8051

IC751 SVITA7317P RELAY DRIVE

Q601, 602 2SA798 DIFFERENTIAL AMP

Q607, 608 2SC1845 EMITTER FOLLOWER

Q603~606 2SC1815 CURRENT MIRROR

Q609, 610 2SC2631 PRE DRIVE

Q753, 754 2SC1845 IMPEADANCE DETECTOR

Q751 2SA992 RELAY HOLD

Q752 2SC1845 RELAY HOLD

D601, 602, 605, 606 MA162A

D603, 604 SVDMA26-2

D607~614 20A90

D753~755 MA162

D705, 706 SVDMZL316A

D707, 708, 711 SVDSR1K2

D701~704 SVDS3V20

D751 SVDSR1K2

D752 MA150

D709 SVDMZ333B

D710 SVDMZ327B

D712 SVDMZ306CZ

S602 (REMOTE)

S601 (MAIN)

SPEAKER L MAIN R L REMOTE R

HEADPHONES

S702 (VOLTAGE SELECTOR) 110V 120V 220V 240V

(POWER) S701

C750 0.01

AC 110/120/220/240V AC 50/60Hz

F4 T630mA

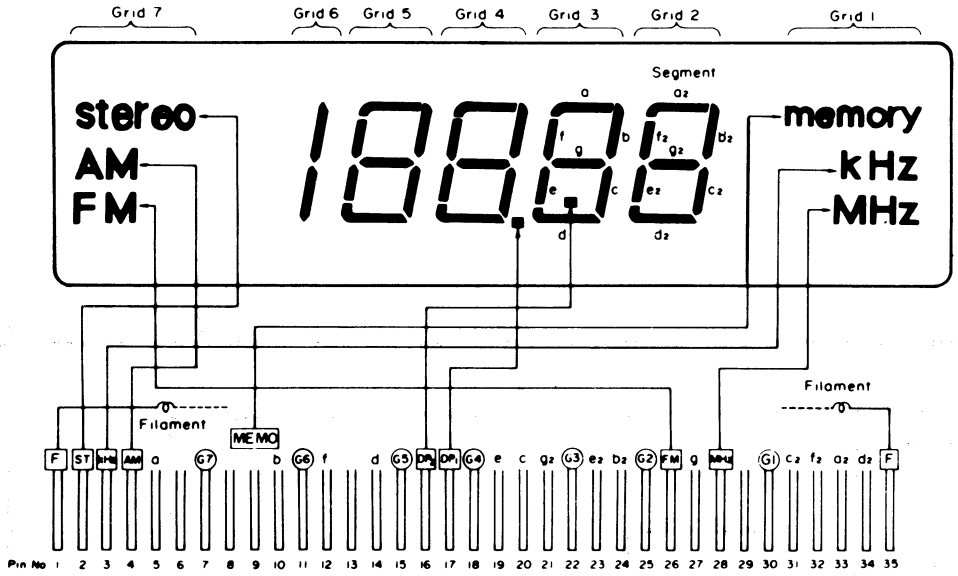
F3 T630mA

F2 T1.6A

F1 T3.15A

PL1 (63V 0.25A)

• Fluorescent Display Tube (FL)



SA-424

Continued from page 20

Ref. No.		Part No.	Part Name & Description
R203		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R204		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R205		RRD18XK153	Chip, 15kΩ, 1/8W, ± 10%
R206		RRD18XK123	Chip, 12kΩ, 1/8W, ± 10%
R209		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R210		RRD18XK101	Chip, 100Ω, 1/8W, ± 10%
R212		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R213		RRD18XK101	Chip, 100Ω, 1/8W, ± 10%
R214, 215		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R216		RRD18XK562	Chip, 5.6kΩ, 1/8W, ± 10%
R217		RRD18XK682	Chip, 6.8kΩ, 1/8W, ± 10%
R218		RRD18XK153	Chip, 15kΩ, 1/8W, ± 10%
R219		RRD18XK331	Chip, 330Ω, 1/8W, ± 10%
R220		RRD18XK183	Chip, 18kΩ, 1/8W, ± 10%
R221		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R222		RRD18XK822	Chip, 8.2kΩ, 1/8W, ± 10%
R223		RRD18XK333	Chip, 33kΩ, 1/8W, ± 10%
R224		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R225		**ERO25CKF1003**	Metal Film, 100kΩ, 1/4W, ± 1%
R227		RRD18XK821	Chip, 820Ω, 1/8W, ± 10%
R228		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R301		**ERD25FJ220**	Carbon, 22Ω, 1/4W, ± 5%
R303		RRD18XK223	Chip, 22kΩ, 1/8W, ± 10%
R304		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R305, 306		RRD18XK473	Chip, 47kΩ, 1/8W, ± 10%
R307, 308		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R309, 310		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R311, 312		RRD18XK562	Chip, 5.6kΩ, 1/8W, ± 10%
R313, 314		RRD18XK472	Chip, 4.7kΩ, 1/8W, ± 10%
R315, 316		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R317		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R319		RRD18XK102	Chip, 1kΩ, 1/8W, ± 10%
R320		RRD18XK153	Chip, 15kΩ, 1/8W, ± 10%
R321		**ERD25FJ562**	Carbon, 5.6kΩ, 1/8W, ± 10%
R322		RRD18XK124	Chip, 120kΩ, 1/8W, ± 10%
R323		RRD18XK392	Chip, 3.9kΩ, 1/8W, ± 10%
R324		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R325		RRD18XK473	Chip, 47kΩ, 1/8W, ± 10%
R327		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R328		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R329, 330		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R351		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R390		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R401, 402		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R403, 404		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R405, 406		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R407, 408		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R409, 410		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R411, 412		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R413, 414		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R415, 416		**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R417, 418		**ERO25CKF6801**	Metal Film, 6.8kΩ, 1/4W, ± 1%
R419, 420		**ERO25CKF1003**	Metal Film, 100kΩ, 1/4W, ± 1%
R421, 422		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R423, 424		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R425, 426		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R427, 428		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R429, 430		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R431, 432		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R433, 434		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R435, 436		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R439, 440		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R441, 442		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R445		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R453, 454		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R455, 456		RRD18XK472	Chip, 4.7kΩ, 1/8W, ± 10%
R457, 458		RRD18XK472	Chip, 4.7kΩ, 1/8W, ± 10%
R459, 460		**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R501, 502		**ERD25TJ474**	Carbon, 470kΩ, 1/4W, ± 5%
R503, 504		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R505, 506		**ERD25TJ474**	Carbon, 470kΩ, 1/4W, ± 5%
R507, 508		**ERD25TJ474**	Carbon, 470kΩ, 1/4W, ± 5%
R551		RRD18XK392	Chip, 3.9kΩ, 1/8W, ± 10%
R552		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R553		RRD18XK102	Chip, 1kΩ, 1/8W, ± 10%
R554		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R555, 556		RRD18XK332	Chip, 3.3kΩ, 1/8W, ± 10%
R557, 558		RRD18XK223	Chip, 22kΩ, 1/8W, ± 10%
R601, 602		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R603, 604		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R605, 606		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R607, 608		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R609, 610		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R611, 612		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R613, 614		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R615, 616		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R617, 618		**ERD25TJ184**	Carbon, 180kΩ, 1/4W, ± 5%
R619, 620		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R621, 622		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R623, 624		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R625, 626	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R627, 628		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R629, 630		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R631, 632		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R633, 634		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R635, 636		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R637, 638	⚠	**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R639, 640		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R641, 642		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R643, 644		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R645, 646	⚠	**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R647, 648	⚠	**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R649, 650		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R653, 654	⚠	**ERD50FJ100**	Carbon, 10Ω, 1/2W, ± 5%
R659, 660		**ERG1ANJ331**	Metal Oixde, 330Ω, 1W, ± 5%
R661	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R663, 664		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R701	⚠	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R702		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R703	⚠	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R704	⚠	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R705		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R706	⚠	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R707	⚠	**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R708	⚠	**ERD50FJ222**	Carbon, 2.2kΩ, 1/2W, ± 5%
R709		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R710	⚠	**ERD50FJ390**	Carbon, 39Ω, 1/2W, ± 5%
R711		**ERG3ANJ820**	Metal Oxide, 82Ω, 3W, ± 5%
R712		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R713		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R714	⚠	**ERD50FJ120**	Carbon, 12Ω, 1/2W, ± 5%
R715		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R716		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R717	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R718		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R719	⚠	**ERG2ANJ331**	Metal Oxide, 330Ω, 1/2W, ± 5%
R751		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R752	⚠	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R753		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R754		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R755		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R756		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R757		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R758		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R759		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R760		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R761		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R762		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R763		**ERG2ANJ471**	Metal Oxide, 470Ω, 2W, ± 5%
R767, 768	⚠	**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R769, 770		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R771, 772		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R773, 774		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R901		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R902		RRD18XK821	Chip, 820Ω, 1/8W, ± 10%
R903		RRD18XK223	Chip, 22kΩ, 1/8W, ± 10%
R904		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R905		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R906, 907		RRD18XK331	Chip, 330Ω, 1/8W, ± 10%
R908		RRD18XK331	Chip, 330Ω, 1/8W, ± 10%
R909		RRD18XK473	Chip, 47kΩ, 1/8W, ± 10%
R910		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R911		RRD18XK333	Chip, 33kΩ, 1/8W, ± 10%
R912		RRD18XK473	Chip, 47kΩ, 1/8W, ± 10%
R914		RRD18XK473	Chip, 47kΩ, 1/8W, ± 10%
R915		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R916, 917		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R918, 919		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%
R920, 921		RRD18XK332	Chip, 3.3kΩ, 1/8W, ± 10%
R922		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R923		**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R924, 925		RRD18XK223	Chip, 22kΩ, 1/8W, ± 10%
R926		RRD18XK223	Chip, 22kΩ, 1/8W, ± 10%
R927		RRD18XK333	Chip, 33kΩ, 1/8W, ± 10%
R928		RRD18XK332	Chip, 3.3kΩ, 1/8W, ± 10%
R929		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R930		RRD18XK223	Chip, 22kΩ, 1/8W, ± 10%
R931		RRD18XK103	Chip, 10kΩ, 1/8W, ± 10%

Ref. No.		Part No.	Part Name & Description
R933		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R935		RRD18XK104	Chip, 100kΩ, 1/8W, ± 10%
R936		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
CAPACITORS			
C1		ECKD1H102ZF	Ceramic, 0.001µF, 50V, +80% −20%
C2		ECCD1H030CC	Ceramic, 3pF, 50V, ± 0.25pF
C3		ECKD1H102MD	Ceramic, 0.001µF, 50V, ± 20%
C4		ECCD1H040CC	Ceramic, 4pF, 50V, ± 0.25pF
C5		ECKD1H102ZF	Ceramic, 0.001µF, 50V, +80% −20%
C6		ECCD1H050CC	Ceramic, 5pF, 50V, ± 0.25pF
C7		ECKD1H102MD	Ceramic, 0.001µF, 50V, ± 20%
C8, 9		ECCD1H040CC	Ceramic, 4pF, 50V, ± 0.25pF
C10		ECCD1H181K	Ceramic, 180pF, 50V, ± 10%
C11		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C12		ECKD1H102ZF	Ceramic, 0.001µF, 50V, +80% −20%
C14		ECKD1H102MD	Ceramic, 0.001µF, 50V, ± 20%
C15		ECUX1H070DC	Chip, 7pF, 50V, ± 0.5pF
C16		ECUX1H390KC	Chip, 39pF, 50V, ± 10%
C17		ECUX1H100KC	Chip, 10pF, 50V, ± 10%
C18		ECUX1H102ZF	Chip, 0.001µF, 50V, +80% −20%
C19		ECUX1H020CC	Chip, 2pF, 50V, ± 0.25pF
C20		ECUX1H010CC	Chip, 1pF, 50V, ± 0.25pF
C21, 22		ECUX1H102ZF	Chip, 0.001µF, 50V, +80% −20%
C23, 24		ECKD1H102ZF	Ceramic, 0.001µF, 50V, +80% −20%
C50, 51 [XL] only	⚠	ECKDHS101MB	Ceramic, 100pF, 400VAC, ± 20%
C52 [XL] only	⚠	ECKDHS102MD	Ceramic, 0.001µF, 400VAC, ± 20%
C53 [XL] only		**ECEA50Z1**	Electrolytic, 1µF, 50V
C101		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C102		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C103		ECUX1H223ZF	Chip, 0.022µF, 50V, +80% −20%
C105, 106		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C107		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C108		ECCD1H560K	Ceramic, 56pF, 50V, ± 10%
C109		**ECEA50Z1**	Electrolytic, 1µF, 50V,
C110		ECCD1H050CC	Ceramic, 5pF, 50V, ± 0.25pF
C111		**ECEA50M4R7R**	Electrolytic, 4.7µF, 50V
C112		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C113		**ECEA1HS100**	Electrolytic, 10µF, 50V
C114		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C115, 116		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C117		ECUX1H223ZF	Chip, 0.022µF, 50V, +80% −20%
C118		**ECEA50Z1**	Electrolytic, 1µF, 50V
C119		**ECEA0JS471**	Electrolytic, 470µF, 6.3V
C120		**ECEA50Z1**	Electrolytic, 1µF, 50V
C122		**ECEA50ZR68**	Electrolytic, 0.68µF, 50V
C124		ECKD1H102ZF	Ceramic, 0.001µF, 50V, +80% −20%
C150		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C151		ECUX1H103ZF	Chip, 0.01µF, 50V, +80% −20%
C152, 153		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C154		ECUX1H390KC	Chip, 39pF, 50V, ± 10%
C190		ECCD1H121K	Ceramic, 120pF, 50V, ± 10%
C191		**ECEA50Z3R3**	Electrolytic, 3.3µF, 50V
C201		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C203		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C204		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C206		**ECEA1AS470**	Electrolytic, 47µF, 10V
C207, 208		**ECEA1HS100**	Electrolytic, 10µF, 50V
C209		ECKD1H103ZF	Ceramic, 0.01µF, 50V, +80% −20%
C210		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C211		ECCD1H150KC	Ceramic, 15pF, 50V, ± 10%
C212		**ECEA1JS4R7**	Electrolytic, 4.7µF, 6.3V
C213		ECKD1H223ZF	Ceramic, 0.022µF, 50V, +80% −20%
C214		ECQM1H473KZ	Polyester, 0.047µF, 50V, ± 10%
C216		ECQP1471JZ	Polypropylene, 470pF, 100V, ± 5%
C217		ECQM1H183KZ	Polyester, 0.018µF, 50V, ± 10%
C218		**ECEA1JS4R7**	Electrolytic, 4.7µF, 63V,
C250 [XL] only	⚠	ECKDHS102MD	Ceramic, 0.001µF, 400VAC, ± 20%
C301, 302 except for [XL]		ECQM1H102JZ	Polyester, 0.001µF, 50V, ± 5%
C303, 304		ECUX1H391KR	Chip, 390pF, 50V, ± 10%
C305, 306		ECQM1H472KZ	Polyester, 0.0047µF, 50V, ± 10%
C307, 308		**ECEA50ZR33**	Electrolytic, 0.33µF, 50V
C309		**ECEA50ZR47**	Electrolytic, 0.47µF, 50V
C310		ECQP1471JZ	Polypropylene, 470pF, 100V, ± 5%
C311		**ECEA50Z1**	Electrolytic, 1µF, 50V
C312		**ECEA50Z3R3**	Electrolytic, 3.3µF, 50V
C313		ECQM1H473KZ	Polyester, 0.047µF, 50V, ± 10%
C314		**ECEA50ZR47**	Electrolytic, 0.47µF, 50V
C315, 316		ECQM1H222KZ	Polyester, 0.0022µF, 50V, ± 10%
C317		**ECEA1ES101**	Electrolytic, 100µF, 25V
C318, 319		ECUX1H103ZF	Chip, 0.01µF, 50V, +80% −20%
C320		ECCD1H121K	Ceramic, 120pF, 50V, ± 10%
C321		**ECEA25Z4R7**	Electrolytic, 4.7µF, 25V
C401, 402		**ECEA50M3R3R**	Electrolytic, 3.3µF, 50V

Part Name & Description			
arbon,	100kΩ,	1/4W,	± 5%
hip,	100kΩ,	1/8W,	± 10%
arbon,	220Ω,	1/4W,	± 5%
eramic,	0.001μF,	50V,	+80% −20%
eramic,	3pF,	50V,	± 0.25pF
eramic,	0.001μF,	50V,	± 20%
eramic,	4pF,	50V,	± 0.25pF
eramic,	0.001μF,	50V,	+80% −20%
eramic,	5pF,	50V,	± 0.25pF
eramic,	0.001μF,	50V,	± 20%
eramic,	4pF,	50V,	± 0.25pF
eramic,	180pF,	50V,	± 1C%
eramic,	0.01μF,	50V,	+80% −20%
eramic,	0.001μF,	50V,	+80% −20%
eramic,	0.001μF,	50V,	± 20%
hip,	7pF,	50V,	± 0.5pF
hip,	39pF,	50V,	± 10%
hip,	10pF,	50V,	± 10%
hip,	0.001μF,	50V,	+80% −20%
hip,	2pF,	50V,	± 0.25pF
hip,	1pF,	50V,	± 0.25pF
hip,	0.001μF,	50V,	+80% −20%
eramic,	0.001μF,	50V,	+80% −20%
eramic,	100pF,	400VAC,	± 20%
eramic,	0.001μF,	400VAC,	± 20%
ectrolytic,	1μF,	50V	
eramic,	0.01μF,	50V,	+80% −20%
eramic,	0.022μF,	50V,	+80% −20%
hip,	0.022μF,	50V,	+80% −20%
eramic,	0.022μF,	50V,	+80% −20%
eramic,	56pF,	50V,	± 10%
ectrolytic,	1μF,	50V,	
eramic,	5pF,	50V,	± 0.25pF
ectrolytic,	4.7μF,	50V	
eramic,	0.022μF,	50V,	+80% −20%
ectrolytic,	10μF,	50V	
eramic,	0.022μF,	50V,	+80% −20%
eramic,	0.01μF,	50V,	+80% −20%
hip,	0.022μF,	50V,	+80% −20%
ectrolytic,	1μF,	50V	
ectrolytic,	470μF,	6.3V	
ectrolytic,	1μF,	50V	
ectrolytic,	0.68μF,	50V	
eramic,	0.001μF,	50V,	+80% −20%
eramic,	0.01μF,	50V,	+80% −20%
hip,	0.01μF,	50V,	+80% −20%
eramic,	0.022μF,	50V,	+80% −20%
hip,	39pF,	50V,	± 10%
eramic,	120pF,	50V,	± 10%
ectrolytic,	3.3μF,	50V	
eramic,	0.01μF,	50V,	+80% −20%
eramic,	0.022μF,	50V,	+80% −20%
eramic,	0.01μF,	50V,	+80% −20%
ectrolytic,	47μF,	10V	
ectrolytic,	10μF,	50V	
eramic,	0.01μF,	50V,	+80% −20%
eramic,	0.022μF,	50V,	+80% −20%
eramic,	15pF,	50V,	± 10%
ectrolytic,	4.7μF,	6.3V	
eramic,	0.022μF,	50V,	+80% −20%
lyester,	0.047μF,	50V,	± 10%
lypropylene,	470pF,	100V,	± 5%
lyester,	0.018μF,	50V,	± 10%
ectrolytic,	4.7μF,	63V,	
eramic,	0.001μF,	400VAC,	± 20%
lyester,	0.001μF,	50V,	± 5%
hip,	390pF,	50V,	± 10%
lyester,	0.0047μF,	50V,	± 10%
ectrolytic,	0.33μF,	50V	
ectrolytic,	0.47μF,	50V	
lypropylene,	470pF,	100V,	± 5%
ectrolytic,	1μF,	50V	
ectrolytic,	3.3μF,	50V	
lyester,	0.047μF,	50V,	± 10%
ectrolytic,	0.47μF,	50V	
lyester,	0.0022μF,	50V,	± 10%
ectrolytic,	100μF,	25V	
hip,	0.01μF,	50V,	+80% −20%
eramic,	120pF,	50V,	± 10%
ectrolytic,	4.7μF,	25V	
ectrolytic,	3.3μF,	50V	

Ref. No.		Part No.	Part Name & Description
C403, 404		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C405, 406		ECCD1H680K	Ceramic, 68pF, 50V, ± 10%
C407, 408		ECKD1H103MD	Ceramic, 0.01μF, 50V, ± 20%
C409		**ECEA50Z1**	Electrolytic, 1μF, 50V
C411, 412		ECQM1H102KZ	Polyester, 0.001μF, 50V, ± 10%
C413, 414		ECQM1H103JZ	Polyester, 0.01μF, 50V, ± 5%
C415, 416		ECQM1H393JZ	Polyester, 0.039μF, 50V, ± 5%
C417, 418		**ECEA1AS101**	Electrolytic, 100μF, 10V
C419		**ECEA50Z1**	Electrolytic, 1μF, 50V
C421, 422	△	**ECEA50N1**	Electrolytic, 1μF, 50V
C423, 424		ECQM1H222KZ	Polyester, 0.0022μF, 50V, ± 10%
C425, 426		ECCD1H820K	Ceramic, 82pF, 50V, ± 10%
C427, 428		ECQM1H472KZ	Polyester, 0.0047μF, 50V, ± 10%
C429, 430		ECQM1H223KZ	Polyester, 0.022μF, 50V, ± 10%
C431, 432		ECQM1H563KZ	Polyester, 0.056μF, 50V, ± 10%
C501, 502		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C503, 504		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C505, 506		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C507, 508		ECCD1H390K	Ceramic, 39pF, 50V, ± 10%
C509, 510		**ECEA50Z1**	Electrolytic, 1μF, 50V
C511, 512		**ECEA1HS100**	Electrolytic, 10μF, 50V
C513, 514		**ECEA50Z1**	Electrolytic, 1μF, 50V
C551, 552		ECQM1H332KZ	Polyester, 0.0033μF, 50V, ± 10%
C553, 554		ECQM1H333KZ	Polyester, 0.033μF, 50V, ± 10%
C555, 556		ECQM1H104KZ	Polyester, 0.1μF, 50V, ± 10%
C557, 558		ECQM1H183KZ	Polyester, 0.018μF, 50V, ± 10%
C601, 602		ECKD1H221KB	Ceramic, 220pF, 50V, ± 10%
C603, 604		ECCD1H560K	Ceramic, 56pF, 50V, ± 10%
C605, 606		ECKD1H471KB	Ceramic, 470pF, 50V, ± 10%
C607, 608		ECCD1H2R5C	Ceramic, 2.5pF, 50V, ± 0.25pF
C609, 610		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C615, 616		ECCD1H330K	Ceramic, 33pF, 50V, ± 10%
C617, 618		**ECEA1JS330**	Electrolytic, 33μF, 63V
C621, 622		ECKD1H333ZF	Ceramic, 0.033μF, 50V, +80% −20%
C623, 624		ECCD2H070D	Ceramic, 7pF, 500V, ± 0.5pF
C625, 626		ECCD2H070D	Ceramic, 7pF, 500V, ± 0.5pF
C627, 628		ECKD1H821KB	Ceramic, 820pF, 50V, ± 10%
C629, 630		ECKD1H331KB	Ceramic, 330pF, 50V, ± 10%
C633, 634		ECKD1H821KB	Ceramic, 820pF, 50V, ± 10%
C635, 636		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C639		**ECEA1HS331**	Electrolytic, 330μF, 50V
C702, 703		ECETS1HV822U	Electrolytic, 8200μF, 50V
C704		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C705		**ECEA1ES101**	Electrolytic, 100μF, 25V
C706		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C707		**ECEA1ES101**	Electrolytic, 100μF, 25V
C708		**ECEA1HS470**	Electrolytic, 47μF, 50V
C709		**ECEA1JS330**	Electrolytic, 33μF, 63V
C710		ECKD2H103PE	Ceramic, 0.01μF, 500V, +100% 0%
C711		**ECEA1HS331**	Electrolytic, 330μF, 50V
C712		**ECEA1HS221**	Electrolytic, 220μF, 50V
C713		**ECEA1ES101**	Electrolytic, 100μF, 25V
C714, 715		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C716		**ECEA1HS100**	Electrolytic, 10μF, 50V
C717		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C718		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80% −20%
C750	△	ECKDKC103PF	Ceramic, 0.01μF, 400VAC, +100% 0%
C751		**ECEA50Z1**	Electrolytic, 1μF, 50V
C752		**ECEA1CS330**	Electrolytic, 33μF, 16V
C753		**ECEA2AS100**	Electrolytic, 10μF, 100V
C754		**ECEA50Z1**	Electrolytic, 1μF, 50V
C755, 756		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C757	△	ECEA1CN470S	Non-Polar Electrolytic, 47μF, 16V
C901		ECUX1H103ZF	Chip, 0.01μF, 50V, +80% −20%
C902		**ECEA50M4R7R**	Electrolytic, 4.7μF, 50V
C903		ECUX1H103ZF	Chip, 0.01μF, 50V, +80% −20%
C904		ECUX1H223ZF	Chip, 0.022μF, 50V, +80% −20%
C905		**ECEA1VS101**	Electrolytic, 100μF, 35V
C906, 907		ECUX1H103ZF	Chip, 0.01μF, 50V, +80% −20%
C908		ECUX1H220KC	Chip, 22pF, 50V, ± 10%
C909		ECUX1H180KC	Chip, 18pF, 50V, ± 10%
C910		ECUX1H150KC	Chip, 15pF, 50V, ± 10%
C912		ECUX1H223ZF	Chip, 0.022μF, 50V, +80% −20%
C913		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C915		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C916		**ECEA1ES470**	Electrolytic, 47μF, 25V
C917		ECUX1H223ZF	Chip, 0.022μF, 50V, +80% −20%
C918		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C919		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80% −20%
C920		ECUX1H391KR	Chip, 390pF, 50V, ± 10%
C920		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C921		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C922		ECUX1H103ZF	Chip, 0.01μF, 50V, +80% −20%

■ REPLACEMENT PARTS LIST...Cabinet & Chassis Parts

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety Notice: Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. [K] -marked parts are used for black only, while ○-marked parts are for silver type only.
4. Parts other than [K]- and ○-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. : SA-424 (K)

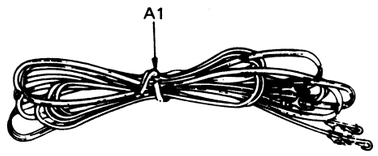
Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	○	SGX6967	Ornament, Left Side
1	[K]	SGX6967–1	Ornament, Left Side (Black)
2		SBC321–7	Button, Power and Input Selector
3		SUS163	Spring, Button
4	○	SGWA424E	Front Panel Ass'y
4	[K]	SGWA424KE	Front Panel Ass'y (Black)
4–1		SGU195	Transparent Cover
4–2	○	SGX6971–1	Ornament Plate
4–2	[K]	SGX6971–5	Ornament Plate (Black)
4–3		SBC329–2	Button, AM FM Selector
4–4		SBC327–1	Button, Tuning
4–5		SBC325–1	Button, Preset
4–6		SDU57	Guide, LED
4–7		SUW1735–1	Bracket, PCB
5		SBN973	Knob, Tone and Balance Control
6		SBN971	Knob, Volume Control
7	○	SGX6969	Ornament, Right Side
7	[K]	SGX6969–1	Ornament, Right Side (Black)
8	○	SDU51	Plate, Ornament
8	[K]	SDU51–1	Plate, Ornament
9		SDU53–1	Tinted Plate
10		SHR9539	Holder, LED (Quart Lock)
11		SHR9537	Holder, LED (Signal)
12		SBC323–1	Button, Push Switch
13		SJJ61	Jack, Headphone
14		SMP301–1	Cover, Lamp
15	○	SKCA424E	Cabinet Cover
15	[K]	SKCA424KE	Cabinet Cover (Black)
16 [EX]		SGP2510–1F	Rear Panel
16 [EG, EH]		SGP2510–1D	Rear Panel
16 [XA]		SGP2510–2B	Rear Panel
16 [XL]		SGP2510–3B	Rear Panel
17		SHR127	Bushing, AC Cord
17 [XL] only		SHR131	Bushing, AC Cord
18	△	**SJA88**	AC Cord
18 [XA] only	△	SJA111	AC Cord
18 [XL] only	△	**QFC1207MA**	AC Cord
19		SJF4813–1	Terminal Board, Speaker
20		SJB3005–1	Battery Case
21		SJC7	Battery Terminal
22		SJC9	Battery Terminal
23		SHR5025	Cover, Allocation Switch
24		RJT202B	Terminal
25		SJF8029N	Terminal Board, Input
25 [XL] only		SJF8029–2N	Terminal Board, Input
25 [EG] only		SJF8029–6N	Terminal Board, Input
26		SYU269E	Bottom Cover
27		SUV453	Cover, Voltage Adjuster Switch
28 [XA] only	△	SJSA66–2	Socket, AC Outlet

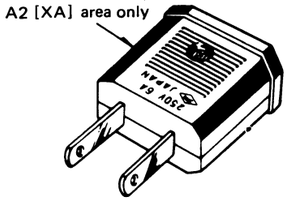
Ref. No.		Part No.	Part Name & Description
SCREWS, WASHERS and NUT			
N1		XTBS3+8BFZ1	Screw, Tapping with Detent⊕3 x 8
N2		**XTB3+10B**	Screw, Tapping ⊕ 3 x 10
N3		**XSN3+6S**	Screw, ⊕ 3 x 6
N4		**XWA3B**	Washer, Spring φ3
N5		SNE4021	Nut
N6		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8
N7		**XWG3**	Washer, Plain φ3
N8		**XTN3+10B**	Screw, Tapping ⊕ 3 x 10
N9	○	**XTB4+8BFN**	Screw, Tapping ⊕ 4 x 8
N9	[K]	**XTB4+8BFZ**	Screw, Tapping ⊕ 4 x 8 (Black)
N10	○	**XTB3+8BFN**	Screw, Tapping ⊕ 3 x 8
N10	[K]	**XTB3+8BFZ**	Screw, Tapping ⊕ 3 x 8 (Black)
N11 [XL] only		**XWA3BFN**	Washer, Spring φ3
N12		**XWG4FZ**	Washer, Plain φ4
N13		**XWA4BFZ**	Washer, Spring φ4
N14		**XSN4+10BVS**	Screw, ⊕ 4 x 10
N15		**XTB3+16B**	Screw, Tapping ⊕ 3 x 16
N16		**XWA3BFZ**	Washer, Spring φ3
N17		**XSN3+6BVS**	Screw, ⊕ 3 x 6
N18		**XTB3+10BFZ**	Screw, Tapping ⊕ 3 x 10
N19		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8
N20		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕ 3 x 8
N20 [XL] only		XSTS3+8Z	Screw, Tapping ⊕ 3 x 8
N21		**XWA26BFZ**	Washer, Spring φ2.6
N22		**XSN26+5BV**	Screw, ⊕ 2.6 x 5
N23		**XWG3**	Washer, Plain φ3
N24		**XTN3+12BFZ**	Screw, Tapping ⊕ 3 x 12
ACCESSORIES			
A1		SSA267	Cord, FM Indoor Antenna
A2 [XA] only	△	SJP5213–1	Plug Adaptor, AC Power
A3 [EG] only		SQF10803	Instructions Book, Printed Matter
A3 [XA] only		SQF10805	Instructions Book, Printed Matter
A3		SQF10885	Instructions Book, Printed Matter
PACKING PARTS			
P1		SPP689	Polyethylen Bag
P2		SPS3015–2	Pad, Left Side
P2 [XL] only		SPS3015–1	Pad, Left Side
P3		SPS3017	Pad, Right Side
P3 [XL] only		SPS3017–1	Pad, Right Side
P4		SPG3107	Carton Box
P4 [XL] only		SPG3109	Carton Box

Areas

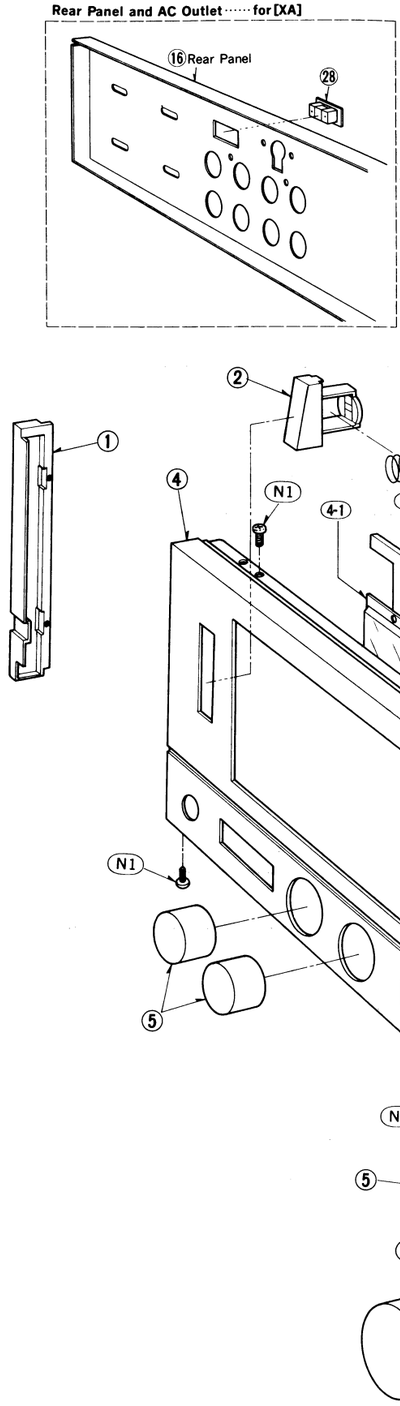
* [EX] is available in Switzerland and Scandinavia.
* [EG] is available in F.R. Germany.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

• Accessories

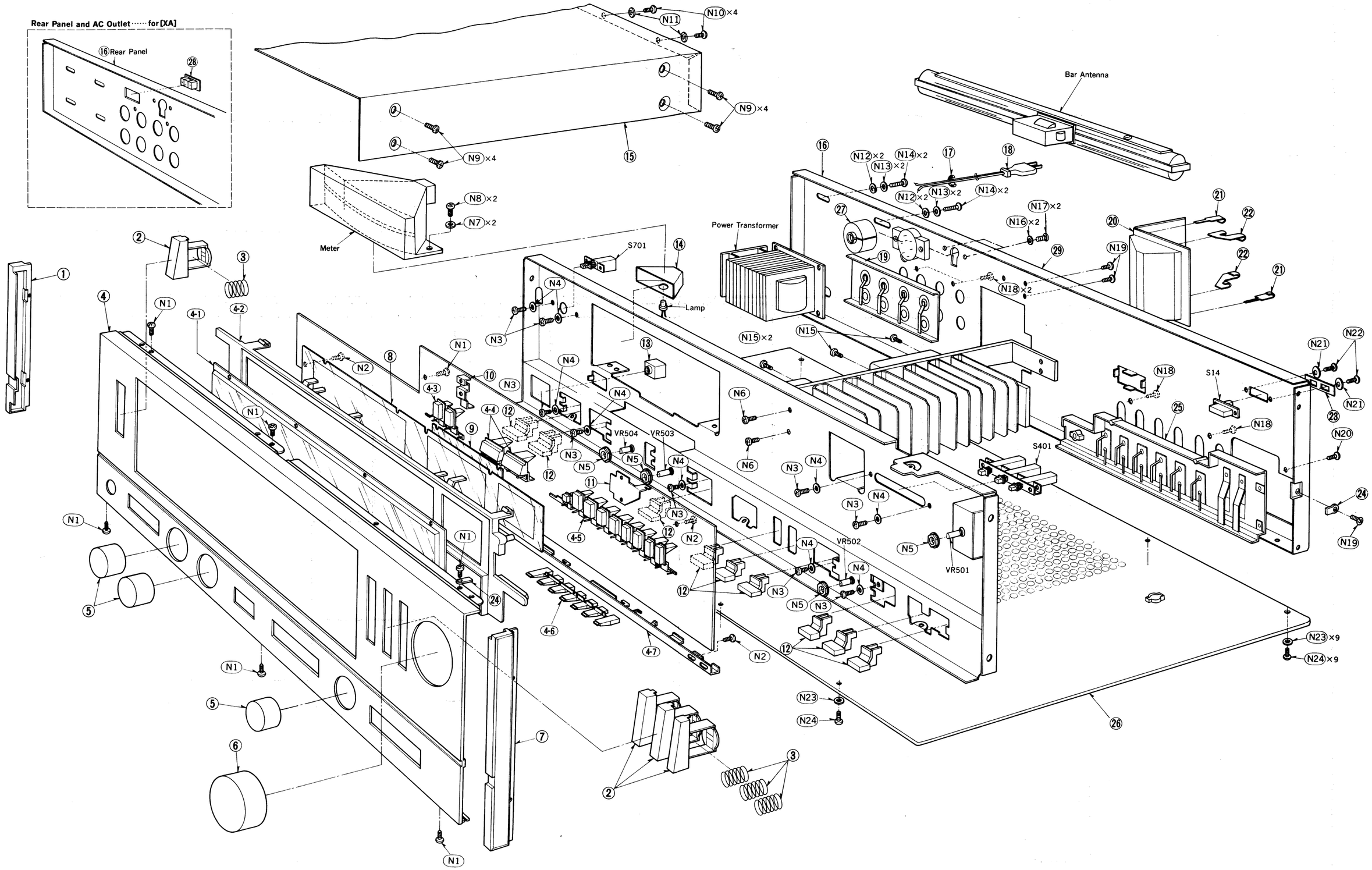




■ EXPLODED VIEW



■ EXPLODED VIEW



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